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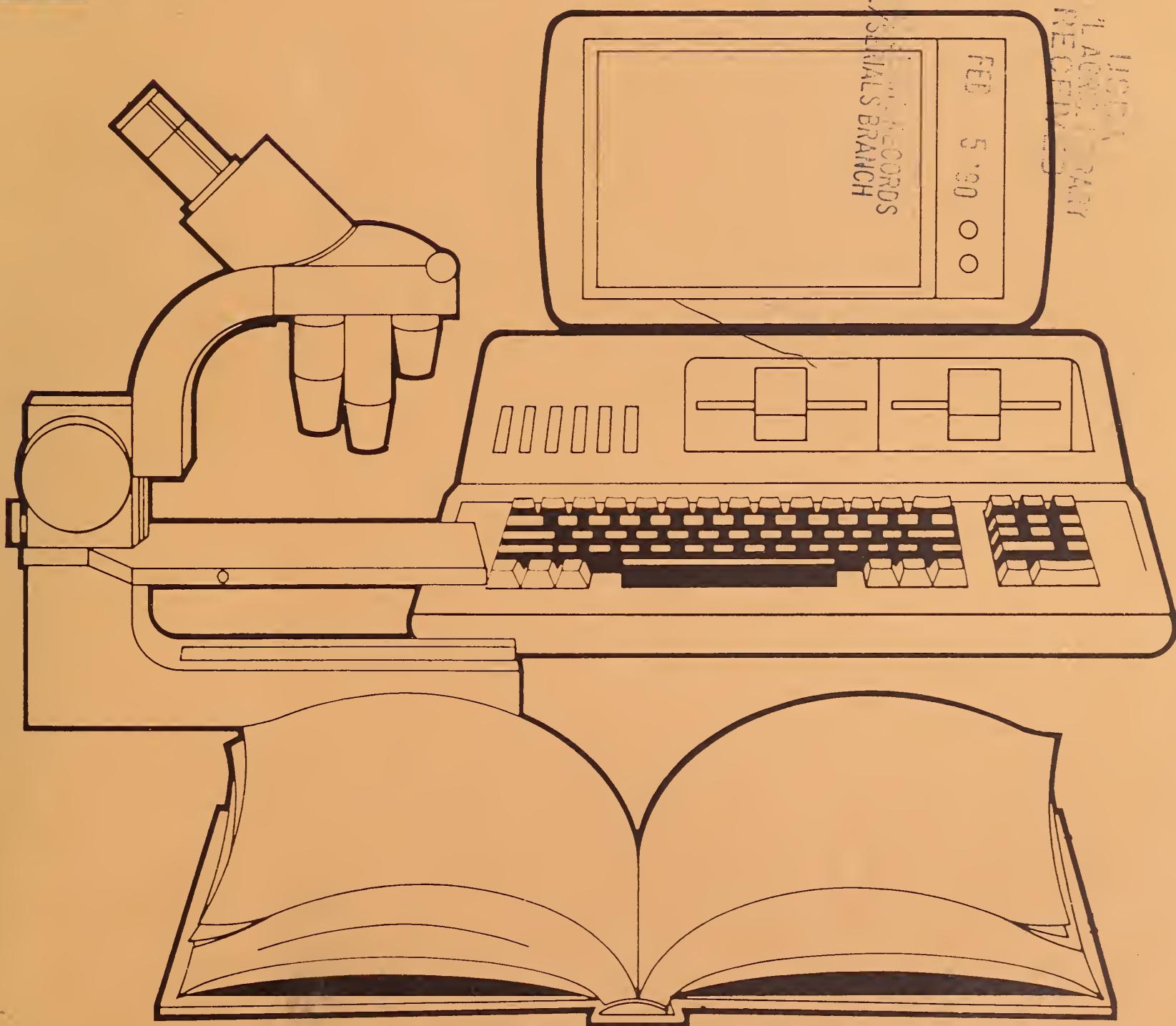
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The Protection of Wheat, January 1985- February 1989

Citations from AGRICOLA
Concerning Diseases and Other
Environmental Considerations



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Compiled and Edited by
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and

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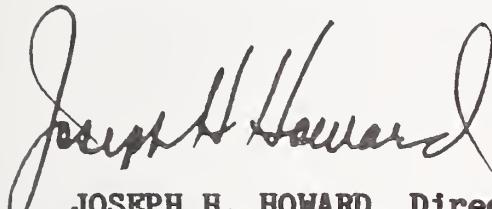
FOREWORD

This, the 25th bibliography in a series jointly sponsored by EPA and NAL, is an update to BLA-43 which covered the period January 1980 - December 1984.

This close working relationship between the two agencies will produce a series of bibliographies which will be useful to EPA in the regulation of pesticides, as well as to any researcher in the field of plant or commodity protection. The broad scope of information contained in this series will benefit USDA, EPA, and the agricultural community as a whole.

The sources referenced in these bibliographies include the majority of the latest available information from U.S. publications involving commodity protection throughout the growing and processing stages for each agricultural commodity.

We welcome the opportunity to join this cooperative effort between USDA and EPA in support of the national agricultural community.



JOSEPH H. HOWARD, Director
National Agricultural Library



DOUGLAS D. CAMPT, Director
Office of Pesticide Programs

INTRODUCTION

The citations in this bibliography are selected from works by U.S. and Canadian authors on The Protection of Wheat, January 1985 - February 1989, which updates BLA-43, The Protection of Wheat, 1980 - December 1984. All citations are derived from AGRICOLA (AGRICultural OnLine Access), the database family compiled by the National Agricultural Library.

This is the 25th bibliography included in a series jointly sponsored by the National Agricultural Library, U.S. Department of Agriculture (USDA-NAL), and the Science Support Branch, Benefits and Use Division, Office of Pesticide Programs, U.S. Environmental Protection Agency (EPA-OPP). Recent volumes in this series include BLA-69, The Protection of Corn, November 1984 - April 1988; BLA-68, The Protection of Root Vegetables; BLA-65, The Protection of Sugarcane and Sugar Beets; BLA-64, Plant Growth Regulators for Higher Plants; and BLA-63, The Protection of Ground and Surface Waters. Plans for the 1988-89 fiscal year include updates for three 1984-85 titles plus seven new titles.

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BIGEBA. Shewry, P.R. Parmar, S.; Pappin, D.J.C. New York : Plenum Press. *Biochemical genetics*. Apr 1987. v. 25 (3/4). p. 309-325. Includes references. (NAL Call No.: DNAL QR73.B5).

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Characterization of a benzyladenine binding-site peptide isolated from a wheat cytokinin-binding protein: sequence analysis and identification of a single affinity-labeled histidine residue by mass spectrometry.

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Chlorophyll loss in wheat infected with *Puccinia recondita*.

PNDAAZ. Ketterling, G.L. Statler, G.D. Grand Forks, N.D. : The Academy. *Proceedings of the North Dakota Academy of Science*. Apr 1988. v. 42. p. 68. Includes references. (NAL Call No.: DNAL 500 N813).

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Chromosomal locations of genes for traits associated with lodging in winter wheat.

CRPSAY. Al-Qaudhy, W. Morris, R.; Mumm, R.F.; Hanna, M.A. Madison, Wis. : Crop Science Society of America. *Lodging in wheat (Triticum aestivum L.)* is a complex character which is influenced by morphological traits as well as environmental conditions. Wheat breeding programs would benefit from cytogenetic information on lodging and associated traits. Reciprocal substitutions between the hard red winter wheats, 'Wichita' and 'Cheyenne', for all chromosomes except Cheyenne 2B in Wichita were used to investigate additive and interactive effects of individual chromosomes on nine traits previously reported to be associated with lodging. Duplicate lines for each chromosome except Cheyenne 3B in Wichita were included to check background homogeneity. Straw strengths were measured by using an Instron universal testing machine (Instron Ltd., Canton, Ma) to break basal internodes of main tillers from plants grown in a field on a Sharpsburg silty-clay loam soil (fine, montmorillonitic, mesic Typic Argiudolls) at Lincoln, NE, with a randomized complete block design. Data on the other eight traits (height, length and diameter of basal internodes, number and width of inner vascular bundles, width of culm wall, diameter of culm cavity, and width of tissue from epidermis through sclerenchyma layer) were collected from main tillers of a greenhouse planting with an augmented randomized complete block design. Wichita and Cheyenne differed significantly only in plant height and basal-internode length among the nine traits. Substitutions of Cheyenne chromosomes into Wichita produced almost three times as many significant phenotypic changes as substitutions of Wichita chromosomes into Cheyenne. Reciprocal effects were obtained for chromosomes 3B (number of vascular bundles and culm-wall width) and 3D (basal-internode diameter). Each of the three Cheyenne homoeologous Group 4 chromosome pairs increased the number of vascular bundles in Wichita. Cheyenne chromosomes 3B and 6A each produced favorable effects in Wichita on several traits related to lodging resistance. Other Cheyenne chromosomes w. *Crop science*. July/Aug 1988. v. 28 (4). p. 631-635. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Differential responses of landrace and improved spring wheat genotypes to stress environments.

CRPSAY. Ehdaie, B. Waines, J.G.; Hall, A.E. Madison, Wis. : Crop Science Society of America. Drought and heat stress are major environmental factors reducing grain production of rainfed wheat (*Triticum aestivum L.*) in semiarid regions. The objective of this research was to identify bread wheats with improved adaptation to hot, dry environments. Field studies were conducted to measure effects of terminal drought and heat stress on duration of developmental phases, grain yield, and yield related traits of day-length insensitive spring wheats. Fifteen genotypes, including lines from

landraces of southwestern Iran and improved cultivars from Iran and California, were grown in a nonstress and three artificially imposed stress environments at Moreno Valley, CA, in 1986. Genotype X environment interactions were significant for grain yield and its components. Stress susceptibility of each genotype was estimated using a calculated index based on grain yield. Landrace genotypes and improved cultivars that were evaluated exhibited a wide range in stress susceptibility and adaptation to stress environments. Landrace genotypes and cultivars did not vary for mean stress-susceptibility index values. Landrace genotypes generally had lower yield potential than the cultivars. The stress-susceptibility index identified some genotypes that did not have outstanding yield performance per se in stress environments due to low yield potential and others that had high average yield in stress conditions. Stress susceptibility and yield potential were not associated, indicating that they may be independent components which both contribute to adaptation to stress environments. The stress-susceptibility index was negatively correlated with number of grains per head, grain weight, grain yield, and harvest index under stress conditions, indicating selection for these characters in stress environments might result in decreased susceptibility to stress. Crop science. Sept/Oct 1988. v. 28 (5). p. 838-842. Includes references. (NAL Call No.: DNAL 64.8 C883).

0282

Differential tolerance of spring wheat and spring barley cultivars to three sulfonylurea herbicides.

Spratling, D.L. Whitesides, R.E. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 204-206. (NAL Call No.: DNAL 79.9 W52R).

0283

Double-layer culture technique as a tool for the selection of calluses resistant to toxic material from plant pathogenic fungi.

Lepoivre, P. Viseur, J.; Duham, K.; Carels, N. Hingham, Mass. : Martinus Nijhoff Publishers. Advances in agricultural biotechnology. 1986. (20). p. 45-52. Includes references. (NAL Call No.: DNAL S494.5.B563A39).

0284

Effect of cultivar, environment, and their interaction and stability analyses on milling and baking quality of soft red winter wheat.

CRPSAY. Baenziger, P.S. Clements, R.L.; McIntosh, M.S.; Yamazaki, W.T.; Starling, T.M.; Sammons, D.J.; Johnson, J.W. Madison, Wis. : Crop Science Society of America. Crop science. Jan 1985. v. 25 (1). p. 5-8. Includes 9 references. (NAL Call No.: DNAL 64.8 C883).

0285

Effect of daylength insensitivity on agronomic traits and grain protein in hard red spring wheat.

CRPSAY. Busch, R.H. Elsayed, F.A.; Heiner, R.E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1106-1109. Includes 7 references. (NAL Call No.: DNAL 64.8 C883).

0286

Effect of genes for photoperiodism, semidwarfism, and awns on agronomic characters in a wheat cross.

CRPSAY. Knott, D.R. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1986. v. 26 (6). p. 1158-1162. Includes references. (NAL Call No.: DNAL 64.8 C883).

0287

Effectiveness of stripe rust resistance among Lemhi 53 spring wheat near-isogenic lines.

CRPSAY. Griffey, C.A. Allan, R.E. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 489-493. Includes references. (NAL Call No.: DNAL 64.8 C883).

0288

Effects of an intercultivaral chromosome substitution on winterhardiness and vernalization in wheat.

GENTA. Zemetra, R.S. Morris, R. Baltimore, Md. : Genetics Society of America. Abstract: During a study on the genetic control of winterhardiness in winter wheat (*Triticum aestivum* L. group *aestivum*), a gene that affected vernalization was found on chromosome 3B in the winter wheat cultivar 'Wichita'. When chromosome 3B from Wichita was substituted into the winter wheat cultivar 'Cheyenne', the resultant substitution line exhibited a spring growth habit. This is unusual since a cross between the cultivars Wichita and Cheyenne results in progeny that exhibit the winter growth habit. The F₂ plants from a cross of the 3B substitution line to Cheyenne, the recipient parent, segregated 3 : 1 for heading/no heading response in the absence of vernalization (X₂ = 2.44). Earliness of heading appeared to be due to an additive effect of the 3B gene as shown by the segregation ratio 1:2:1 (earlyheading-later heading-no heading) (X₂ = 2.74). This vernalization gene differs from previously described vernalization genes because, while dominant in a Cheyenne background, its expression is suppressed in Wichita. The gene may have an effect on winter hardiness in Wichita. In a field test for winter survival the 3B substitution line had only 5% survival, while Wichita and Cheyenne had 50 and 80% survival, respectively. No other substitution line significantly reduced winter survival. The difference between Wichita and

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Cheyenne in winterhardiness may be due to the vernalization gene carried on the 3B chromosome. *Genetics*. June 1988. v. 119 (2). p. 453-456. Includes references. (NAL Call No.: DNAL 442.8 G28).

0289

Effects of low temperatures and genotypes on pollen development in wheat.

CRPSAY. Qian, C.M. Xu, A.L.; Liang, G.H. Madison, Wis. : Crop Science Society of America. *Crop science*. Jan/Feb 1986. v. 26 (1). p. 43-46. Includes 8 references. (NAL Call No.: DNAL 64.8 C883).

0290

Effects of past breeding efforts on productivity traits of hard red spring wheat.

NDFRA. Deckard, E.L. Stolz, B.J.; Frohberg, R.C. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. July/Aug 1987. v. 45 (1). p. 3-7. Includes references. (NAL Call No.: DNAL 100 N813B).

0291

Effects of seeding rates on harvest index, grain yield, and biomass yield in winter wheat.
CRPSAY. Sharma, R.C. Smith, E.L. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1987. v. 27 (3). p. 528-531. Includes references. (NAL Call No.: DNAL 64.8 C883).

0292

Effects of temperature, moisture stress, and seed size on germination of nine spring wheat cultivars.

CRPSAY. Lafond, G.P. Baker, R.J. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1986. v. 26 (3). p. 563-567. Includes references. (NAL Call No.: DNAL 64.8 C883).

0293

Effects of temperature on leaf appearance in spring and winter wheat cultivars.

AGJOAT. Baker, J.T. Pinter, P.J., Jr.; Reginato, R.J.; Kanemasu, E.T. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. July/Aug 1986. v. 78 (4). p. 605-613. Includes references. (NAL Call No.: DNAL 4 AM34P).

0294

Effects of wheat streak mosaic virus infection on fifteen hard red spring wheat cultivars.
NDFRA. Edwards, M.C. McMullen, M.P. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. June/July 1987. v. 44 (6). p. 6-7. Includes references. (NAL Call No.: DNAL 100 N813B).

0295

Enhanced regeneration from wheat callus cultures using dicamba and kinetin.

CRPSAY. Papenfuss, J.M. Carman, J.G. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1987. v. 27 (3). p. 588-593. Includes references. (NAL Call No.: DNAL 64.8 C883).

0296

Environment and cultivar effects on winter wheat response to ethephon plant growth regulator.

AGJOAT. Wiersma, D.W. Oplinger, E.S.; Guy, S.O. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Sept/Oct 1986. v. 78 (5). p. 761-764. Includes references. (NAL Call No.: DNAL 4 AM34P).

0297

Environmental X genotype effects on seed dormancy and after-ripening in wheat.

AGJOAT. Hagemann, M.G. Ciha, A.J. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Mar/Apr 1987. v. 79 (2). p. 192-196. Includes references. (NAL Call No.: DNAL 4 AM34P).

0298

Expression and inheritance of resistance of 'Marquillo' wheat to Hessian fly biotype D.

CRPSAY. Maas, F.B. III. Patterson, F.L.; Foster, J.E.; Hatchett, J.H. Madison, Wis. : Crop Science Society of America. *Crop science*. Jan/Feb 1987. v. 27 (1). p. 49-52. Includes references. (NAL Call No.: DNAL 64.8 C883).

0299

Expression of tolerance of sodium, potassium, magnesium, chlorine, and sulfur dioxide ions and sea water in the amphiploid of *Triticum aestivum* X *Elytrigia elongata*.

CRPSAY. Dvorak, J. Ross, K. Madison, Wis. : Crop Science Society of America. *Crop science*. July/Aug 1986. v. 26 (4). p. 658-660. Includes references. (NAL Call No.: DNAL 64.8 C883).

0300

Fall and early spring aphid (Homoptera: Aphididae) populations affecting wheat and barley production in Virginia.

JEENAI. McPherson, R.M. Starling, T.M.; Camper, H.M. Jr. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. June 1986. v. 79 (3). p. 827-832. Includes references. (NAL Call No.: DNAL 421 J822).

0301

Fate and expression of vector DNA in plant cells.

Czernilofsky, A.P. Baker, B.; Gronenborn, B.; Hain, R.; Leaver, C.; Matzeit, V.; Moore, I.; Schalk, J.; Wirtz, U.; Schell, J. New York : Plenum Press, c1987. *Tailoring genes for crop improvement : an agricultural perspective* / edited by George Bruening ... et al. . p. 189-195. Includes references. (NAL Call No.: DNAL SB123.57.C66 1986).

0302

Feeding behavior, fecundity, and honeydew production of two biotypes of greenbug (Homoptera: Aphididae) on resistant and susceptible wheat.

EVETEX. Ryan, J.D. Dorschner, K.W.; Girma, M.; Johnson, R.C.; Eikenbary, R.D. College Park, Md. : Entomological Society of America. *Environmental entomology*. June 1987. v. 16 (3). p. 757-763. Includes references. (NAL Call No.: DNAL QL461.E532).

0303

Gene induction and repression by salt treatment in roots of the salinity-sensitive Chinese spring wheat and the salinity-tolerant Chinese spring X *Elytrigia elongata* amphiploid.

PNASA. Gulick, P. Dvorak, J. Washington, D.C. : The Academy. *Proceedings of the National Academy of Sciences of the United States of America*. Jan 1987. v. 84 (1). p. 99-103. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0304

Genetic control of cold hardiness and vernalization requirement in winter wheat.

CRPSAY. Brule-Babel, A.L. Fowler, D.B. Madison, Wis. : Crop Science Society of America. A high level of cold hardiness is essential to ensure consistent overwintering of wheat (*Triticum aestivum* L.) in the Northern Great Plains region of North America. Consequently, a clear understanding of the genetic control of cold hardiness would facilitate plant breeding efforts directed at cultivar improvement for this area. Although several genetic studies have been conducted, there is not a general

consensus on the mode of gene action controlling the expression of cold hardiness in wheat. This study used one spring and four winter cultivars representing a wide range of cold hardiness potential to investigate the mode of inheritance and interaction of cold hardiness, determined in a controlled environment that allowed for maximum expression of cold hardiness potential, and vernalization requirement in wheat. Differences in growth habit between parental cultivars were controlled by the *Vrn1* gene. Cold hardiness, estimated as the temperature at which 50% of the plant population was killed (LT50), was controlled by genes with either dominant or additive effects. At least one dominant gene was associated with cold hardiness differences between spring and winter wheat, while genes with mainly additive effects determined differences in cold hardiness among cultivars with the winter growth habit. Broad sense heritability estimates for LT50 in the controlled environment considered ranged from 0 to 88% with most estimates exceeding 50%. In the F2-derived F3 generation, hardy transgressive segregates were most common in crosses between relatively nonhardy cultivars, but no segregates were significantly hardier than the hardiest parental cultivar. Lack of a vernalization requirement did not hinder the development of cold hardiness; however, distribution of F2-derived F3 lines provided evidence of possible genetic linkage or pleiotropism between the gene segregating for growth habit and a gene or genes controlling cold hardiness. *Crop science*. Nov/Dec 1988. v. 28 (6). p. 879-884. Includes references. (NAL Call No.: DNAL 64.8 C883).

0305

Genetic control of phenotypes in wheat stem rust.

APPY. Roelfs, A.P. Palo Alto, Calif. : Annual Reviews, Inc. *Annual review of phytopathology*. Literature review. 1988. v. 26. p. 351-367. Includes references. (NAL Call No.: DNAL 464.8 AN72).

0306

Genetic control of plant height in wheat.

SOGBZ. Merezhko, A.F. Pisareva, L.A.; Prilyuk, L.V. New York, N.Y. : Consultants Bureau. *Soviet genetics*. Translated from: *Genetika*, v. 22 (5), May 1986, p. 725-732. (QH431.A1G4).- Literature review. May 1986. v. 22 (5). p. 537-543. Includes references. (NAL Call No.: DNAL QH431.A1G43).

0307

Genetic improvement in agronomic traits of hard red winter wheat cultivars from 1919 to 1987.

CRPSAY. Cox, T.S. Shroyer, J.P.; Ben-Hui, L.; Sears, R.G.; Martin, T.J. Madison, Wis. : Crop Science Society of America. Periodic evaluation of genetic improvement of crop cultivars is

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useful, both as a demonstration of the importance of plant breeding to the public and as a way of identifying traits or target environments that may require increased efforts by breeders. Evaluation of cultivars from different eras in a common environment is the most direct of the several methods that have been used to estimate breeding progress. Thirty-five hard red winter wheat *Triticum aestivum* L. em. Theil. cultivars introduced or released between ca. 1874 and 1987 were evaluated in experiments at three locations in Kansas during 1986 and 1987 (three other cultivars were evaluated only in 1987) to estimate genetic progress achieved by hard red winter wheat breeding programs. Linear regression of cultivar means on years of release showed increases of 16.2 kg ha⁻¹ yr⁻¹ in grain yield, 0.4 kg m⁻³ yr⁻¹ in volume weight and 0.04 g yr⁻¹ in thousand-kernel weight. Days to heading and plant height decreased at rates of -0.1 d yr⁻¹ and -0.5 cm yr⁻¹, respectively. There were also significant increases over time in lodging resistance. There was no significant change in biomass yield over time. Rates of genetic improvement varied significantly across evaluation environments, with the greatest gain in grain yield (1.4% of the experiment mean per year) estimated in an epidemic of stem and leaf rust (caused by *Puccinia graminis* Pers. f. sp. *tritici* Eriks. & Henn., and *P. recondita* Rob. ex. Desm. f. sp. *tritici*, respectively). Moderate gain per year (0.6%) was estimated in the most highly productive environment, lower gain (0.4%) was found under drought stress, and there was no gain when evaluation was conducted under an epidemic of tan spot (caused by *Helminthosporium tritici-repentis* Died.) a foliar disease. High levels of resistance to *H. tritici-repentis* had not been incorporated into hard red winter wheat cultivars. No evidence of a yield plateau was found for hard red winter wheat cultivars evaluated under. Crop science. Sept/Oct 1988. v. 28 (5). p. 756-760. Includes references. (NAL Call No.: DNAL 64.8 C883).

0308

Genetic studies of crown depth and subcrown internode length in winter wheat.
CRPSAY. Poulos, J.M. Allan, R.E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1987. v. 27 (6). p. 1109-1113. Includes references. (NAL Call No.: DNAL 64.8 C883).

0309

Genetic variation for nitrogen assimilation and translocation in wheat. III. Nitrogen translocation in relation to grain yield and protein.
CRPSAY. Cox, M.C. Qualset, C.O.; Rains, D.W. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 737-740. Includes references. (NAL Call No.: DNAL 64.8 C883).

0310

Genetics of wheat storage proteins and the effect of allelic variation of bread-making quality.

ARPPA. Payne, P.I. Palo Alto : s.n. . Annual review of plant physiology. Literature review. 1987. v. 38. p. 141-153. ill. Includes references. (NAL Call No.: DNAL 450 AN78).

0311

Genotype specific changes in amino acid and polyamine of wheat tissue culture induced by osmotic stress.

Gabor, G. Simon-Sarkadi, L.; Bekes, F.; Erdei, L. Hingham, Mass. : Martinus Nijhoff Publishers. Advances in agricultural biotechnology. 1986. (20). p. 170-176. Includes references. (NAL Call No.: DNAL S494.5.B563A39).

0312

Genotypic differences in tolerance of ice encasement, low temperature flooding, and freezing in winter wheat.

CRPSAY. McKersie, B.D. Hunt, L.A. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 860-863. Includes references. (NAL Call No.: DNAL 64.8 C883).

0313

Glycoproteins at the cell surface in cold hardy and cold tender wheat (*Triticum aestivum* L.).

Jian, L.C. Sun, L.H.; Sun, D.L. New York : Alan R. Liss. Plant biology. In the series analytic: Plant Cold Hardiness / edited by P.H. Li. Proceedings of an International Seminar, September 4-7, 1986, Shanghai, China. 1987. v. 5. p. 59-66. ill. Includes references. (NAL Call No.: DNAL QH301.P535).

0314

Heritability and number of genes controlling leaf rust resistance in four cultivars of wheat.

PHYTAJ. Bjarko, M.E. Line, R.F. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Apr 1988. v. 78 (4). p. 457-461. Includes references. (NAL Call No.: DNAL 464.8 P56).

0315

Hybrid hard red spring wheat seed production potential.

AGJOAT. Howey, S.J. Spilde, L.A.; Edwards, I.B.; Laskar, W.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1988. v. 80 (3). p. 533-536. Includes

references. (NAL Call No.: DNAL 4 AM34P).

0316

Identification of winter wheat cultivars and experimental lines resistant to wheat spindle streak mosaic virus.

PLDRA. Haufler, K.Z. Fulbright, D.W. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1986. v. 70 (1). p. 31-33. Includes 9 references. (NAL Call No.: DNAL 1.9 P69P).

0317

Impact of wheat cultivars on establishment and suppression of summer annual weeds.

AGUOAT. Wicks, G.A. Ramse1, R.E.; Nordquist, P.T.; Schmidt, J.W. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan/Feb 1986. v. 78 (1). p. 59-62. Includes 17 references. (NAL Call No.: DNAL 4 AM34P).

0318

The influence of chaff extracts on the germination of spring triticale.

AGUOAT. Salmon, D.F. Helm, J.H.; Duggan, T.R.; Lakeman, D.M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1986. v. 78 (5). p. 863-867. Includes references. (NAL Call No.: DNAL 4 AM34P).

0319

Influence of cultural practices on incidence of foot rot in winter wheat.

PLDRA. Herrman, T. Wiese, M.V. St. Paul, Minn. : American Phytopathological Society. Plant disease. Nov 1985. . v. 69 (11). p. 948-950. Includes 23 references. (NAL Call No.: DNAL 1.9 P69P).

0320

Inheritance of nitrite reductase and regulation of nitrate reductase, nitrite reductase, and glutamine synthetase isozymes.

PLPRA. Heath-Pagliuso, S. Huffaker, R.C.; Allard, R.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1984. v. 76 (2). p. 353-358. ill. Includes 23 references. (NAL Call No.: DNAL 450 P692).

0321

Insect and mite pests of wheat.

AGRYA. Hatchett, J.H. Starks, K.J.; Webster, J.A. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (13). p. 625-675. Includes references. (NAL Call No.: DNAL 4 AM392).

0322

Keiser, a new winter wheat.

AKFRAC. Bacon, R.K. Jones, J.P. Fayetteville, Ark. : The Station. Arkansas farm research - Arkansas Agricultural Experiment Station. July/Aug 1988. v. 37 (4). p. 18. (NAL Call No.: DNAL 100 AR42F).

0323

LY195259, new chemical hybridizing agent for wheat.

CRPSAY. Tschabold, E.E. Heim, D.R.; Beck, J.R.; Wright, F.L.; Rainey, D.P.; Terando, N.H.; Schwer, J.F. Madison, Wis. : Crop Science Society of America. LY195259, 5-(Aminocarbonyl)-1-(3-methylphenyl)-1H-pyrazole-4-carboxylic acid, has been physically characterized in the laboratory and has been evaluated as a male sterilizing agent under greenhouse and field conditions on several plant species, including wheat (*Triticum aestivum* L.). Male sterilizing agents are useful in producing hybrid seed. Under optimum conditions, the compound when applied as a foliar spray to wheat at rates as low as 1.12 kg a.i. ha-1 has produced greater than 95% male sterility. It also has been effective when applied in the spring as soil-surface treatments. Over 100 cultivars have been tested and had at least 90% male sterility when treated with LY195259. Some crosses made with wheat cultivars treated with LY195259 and a properly nicked pollen source with good pollen load had 80% of the seed set of the selfed male parent. No physical distortion of the hybrid seed was apparent, and no other phytotoxic effects were visually evident from rates as high as 3 times the mean effective dose. Crop science. July/Aug 1988. v. 28 (4). p. 583-588. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

0324

Mass selection for increased seed protein concentration of wheat based on seed density.

CRPSAY. Peterson, C.J. Liu, G.T.; Mattern, P.J.; Johnson, V.A.; Kuhr, S.L. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 523-527. Includes references. (NAL Call No.: DNAL 64.8 C883).

0325

Mechanisms of aluminum tolerance in *Triticum aestivum* L. (wheat). I. Differential pH induced by winter cultivars in nutrient solutions.

AJBOA. Taylor, G.J. Foy, C.D. Baltimore, Md. : Botanical Society of America. American journal of botany. May 1985. v. 72 (5). p. 695-701. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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0326

Mechanisms of aluminum tolerance in *Triticum aestivum* L. (wheat). II. Differential pH induced by spring cultivars in nutrient solutions.

AJBOA. Taylor, G.J. Foy, C.D. Baltimore, Md. : Botanical Society of America. American journal of botany. May 1985. v. 72 (5). p. 702-706. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

0327

Method for evaluating germplasm response to chemical treatment under field conditions.

CRPSAY. Deaton, W.R. Mascia, P.N. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 606-607. Includes references. (NAL Call No.: DNAL 64.8 C883).

0328

Minimizing the risk of producing winter wheat in North Dakota. II. The effect of tillage and variety selection on winter wheat survival and grain yield.

NDFRA. Cox, D.J. Larsen, J.K.; Brun, L.J. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. Mar/Apr 1987. v. 44 (5). p. 14-16. Includes references. (NAL Call No.: DNAL 100 N813B).

0329

Minirhizotron rooting comparisons of three wheat cultivars.

Box, J.E. Jr. Johnson, J.W. Madison, Wis. : The Society. ASA special publication - American Society of Agronomy. In the series analytic: Minirhizotron observation tubes: methods and applications for measuring rhizosphere dynamics / edited by H.M. Taylor. Proceedings of a symposium, December 3, 1986, New Orleans, Louisiana. 1987. (50). p. 123-130. Includes references. (NAL Call No.: DNAL 64.9 AM3).

0330

Modelling the effects on grain yield of genetic variation in some crop characteristics.

NASSD. Austin, R.B. New York, N.Y. : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. Paper presented at the "Workshop on Wheat Growth and Modelling," April 9-12, 1984, Bristol, United Kingdom. 1985. v. 86. p. 157-164. Includes references. (NAL Call No.: DNAL QH301.N32).

0331

Negative interplot interference in field experiments with leaf rust of wheat.

PHYTAJ. Bowen, K.L. Teng, P.S.; Roelfs, A.P. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Oct 1984. v. 74 (10). p. 1157-1161. Includes 17 references. (NAL Call No.: DNAL 464.8 P56).

0332

Nitrogen use in a seedling synthetic allohexaploid developed from durum wheat and *Aegilops squarrosa*.

CRPSAY. Henson, J.F. Gronwald, J.W.; Leonard, R.T.; Waines, J.G. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1074-1076. Includes references. (NAL Call No.: DNAL 64.8 C883).

0333

Number of genes controlling high-temperature, adult-plant resistance to stripe rust in wheat.

PHYTA. Milus, E.A. Line, R.F. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Jan 1986. v. 76 (1). p. 93-96. Includes 21 references. (NAL Call No.: DNAL 464.8 P56).

0334

Organic and inorganic solute contents as selection criteria for salt tolerance in the Triticeae.

Jones, R.G.W. Gorham, J.; McDonnell, E. New York : Wiley, c1984. Salinity tolerance in plants : strategies for crop improvement / edited by Richard C. Staples, Gary H. Toenniessen. p. 189-203. Includes references. (NAL Call No.: DNAL QK753.S3S24).

0335

Phosphorus fractions in the grain of diploid, tetraploid, and hexaploid wheat grown with contrasting phosphorus supplies.

CECHAF. Batten, G.D. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Sept/Oct 1986. v. 63 (5). p. 384-387. Includes references. (NAL Call No.: DNAL 59.8 C33).

0336

Photosynthetic difference among *Triticum* accessions at tillering.

CRPSAY. Johnson, R.C. Kebede, H.; Mornhinweg, D.W.; Carver, B.F.; Rayburn, A.L.; Nguyen, H.T. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 1046-1050. Includes references. (NAL Call No.: DNAL 64.8 C883).

0337

Physiological aspects of spring wheat improvement.

Deckerd, E.L. Busch, R.H.; Kofoid, K.D. Rockville, Md. : American Society of Plant Physiologists, c1985. Exploitation of physiological and genetic variability to enhance crop productivity / edited by James E. Harper, Lawrence E. Schrader, and Robert W. Howell. p. 46-54. Includes 15 references. (NAL Call No.: DNAL SB189.4.E97).

0338

The physiology of water and temperature stress.

AGRYA. Gusta, L.V. Chen, T.H.H. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (13). p. 115-150. Includes references. (NAL Call No.: DNAL 4 AM392).

0339

Plant soil interactions at low pH problem solving: the genetic approach.

CSDSA2. Little, R. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May/Sept 1988. v. 19 (7/12). p. 1239-1257. Includes references. (NAL Call No.: DNAL S590.C63).

0340

A possible role for indoleacetic acid, low temperature, and phospholipid metabolism in the induction of GA3 responsiveness in GA3 insensitive (Rht3-containing) dwarf wheat aleurone.

PLPRA. Singh, S.P. Paleg, L.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1986. v. 82 (3). p. 688-694. Includes references. (NAL Call No.: DNAL 450 P692).

0341

Quantitative determination of the gene action of leaf rust resistance in four cultivars of wheat, *Triticum aestivum*.

PHYTAJ. Bjarko, M.E. Line, R.F. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Apr 1988. v. 78 (4). p. 451-456. Includes references. (NAL Call No.: DNAL 464.8 P56).

0342

Rapeseed: a possible alternative to wheat.

RRMSD. Hairston, J.E. Sanford, J.O.; Lytton, D.L. Mississippi State, Miss. : The Station. Research report - Mississippi Agricultural and Forestry Experiment Station. May 1987. v. 12 (9). 5 p. Includes references. (NAL Call No.: DNAL S79.E37).

0343

Rate and duration of grain fill in spring wheat.

CRPSAY. Bruckner, P.L. Frohberg, R.C. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 451-455. Includes references. (NAL Call No.: DNAL 64.8 C883).

0344

Registration of 'Augusta' wheat.

CRPSAY. Everson, E.H. Freed, R.D.; Zwer, P.K.; Morrison, L.W.; Marchetti, B.L.; Clayton, J.L.; Yamazaki, W.T. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1986. v. 26 (1). p. 201-202. (NAL Call No.: DNAL 64.8 C883).

0345

Registration of 'Frankenmuth' wheat.

CRPSAY. Everson, E.H. Freed, R.D.; Zwer, P.K.; Morrison, L.W.; Marchetti, B.L.; Clayton, J.L.; Gallun, R.L.; Yamazaki. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1986. v. 26 (1). p. 202-203. (NAL Call No.: DNAL 64.8 C883).

0346

Registration of 'Hillsdale' wheat.

CRPSAY. Freed, R.D. Everson, E.H.; Zwer, P.K.; Morrison, L.W.; Glenn, D.J.; Marchetti, B.L.; Fullbright, D.W.; Clayton, J.L.; Clements, R.L. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1986. v. 26 (1). p. 203. (NAL Call No.: DNAL 64.8 C883).

0347

Registration of 'Inia 66R' wheat.

CRPSAY. Quailset, C.O. Vogt, H.E.; Borlaug, N.E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1129. Includes 3 references. (NAL Call No.: DNAL 64.8 C883).

0348

Registration of KS85WGRC01 hessian fly-resistant hard red winter wheat germplasm.

CRPSAY. Gill, B.S. Hatchett, J.H.; Cox, T.S.; Raup, W.J.; Sears, R.G.; Martin, T.J. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1986. v. 26 (6). p. 1266-1267. Includes 2 references. (NAL Call No.: DNAL 64.8 C883).

(PLANT BREEDING)

0349

Registration of 'Norwin' wheat.

CRPSAY. Taylor, G.A. Spitler, G.H.; McGuire, C.F.; Bergman, J.W.; Dubbs, A.L.; Carlson, G.; Stallknecht, G.F.; Stewart, V.R. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1986. v. 26 (5). p. 1086-1087. Includes references. (NAL Call No.: DNAL 64.8 C883).

0350

Registration of 'Rosen' wheat.

CRPSAY. Bacon, R.K. Collins, F.C.; Jones, J.P. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1986. v. 26 (5). p. 1087. Includes references. (NAL Call No.: DNAL 64.8 C883).

0351

Registration of 'Saluda' wheat.

CRPSAY. Starling, T.M. Roane, C.W.; Camper, H.M. Jr. Madison, Wis. : Crop Science Society of America. *Crop science*. Jan/Feb 1986. v. 26 (1). p. 200. (NAL Call No.: DNAL 64.8 C883).

0352

Registration of 'Seward' wheat.

CRPSAY. Cox, D.J. D'Appolonia, B.L.; Miller, J.D. Madison, Wis. : Crop Science Society of America. *Crop science*. Mar/Apr 1988. v. 28 (2). p. 378-379. Includes references. (NAL Call No.: DNAL 64.8 C883).

0353

Registration of 'Shield' wheat.

CRPSAY. Cholick, F.A. Hatchett, J.H.; Steiger, D.K.; Buchenau, G.W.; Sellers, K.M. Madison, Wis. : Crop Science Society of America. *Crop science*. July/Aug 1988. v. 28 (4). p. 720-721. Includes references. (NAL Call No.: DNAL 64.8 C883).

0354

Relationship between resistance to Hessian fly and powdery mildew in soft white spring wheat PI 468960.

CRPSAY. Sunderman, D.W. Hatchett, J.H. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1986. v. 26 (5). p. 1071-1072. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Relationships among important traits in the nitrogen economy of winter wheat.

JPNUDS. Day, G.E. Paulsen, G.M.; Sears, R.G. New York, N.Y. : Marcel Dekker. *Journal of plant nutrition*. 1985. v. 8 (4). p. 357-368. Includes 20 references. (NAL Call No.: DNAL QK867.J67).

0356

Reproduction of *Schizaphis graminum* (Homoptera: Aphididae) on resistant and susceptible wheat genotypes during simulated drought stress induced with polyethylene glycol.

EVETEX. Sumner, L.C. Dorschner, K.W.; Ryan, J.D.; Eikenbary, R.D.; Johnson, R.C.; McNew, R.W. College Park, Md. : Entomological Society of America. *Environmental entomology*. June 1986. v. 15 (3). p. 756-762. Includes references. (NAL Call No.: DNAL QL461.E532).

0357

The residual and interactive expressions of "defeated" wheat stem rust resistance genes.

PHYTAJ. Brodny, U. Nelson, R.R.; Gregory, L.V. St. Paul, Minn. : American Phytopathological Society. *Phytopathology*. May 1986. v. 76 (5). p. 546-549. Includes 13 references. (NAL Call No.: DNAL 464.8 P56).

0358

Resistant winter wheats compared at differing growth stages and leaf positions for tan spot severity.

PLDIDE. Cox, D.J. Hosford, R.M. Jr. St. Paul, Minn. : American Phytopathological Society. *Plant disease*. Oct 1987. v. 71 (10). p. 883-886. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0359

Response of five winter wheat cultivars to growth regulators and increased nitrogen.

CRPSAY. Nafziger, E.D. Wax, L.M.; Brown, C.M. Madison, Wis. : Crop Science Society of America. *Crop science*. July/Aug 1986. v. 26 (4). p. 767-770. Includes references. (NAL Call No.: DNAL 64.8 C883).

0360

Response of hard red spring wheat to CGA-82725.

WEESA6. Mohan, R. Hassanein, E.E.; Lym, R.G.; Miller, S.D. Champaign, Ill. : Weed Science Society of America. *Weed science*. Mar 1988. v. 36 (2). p. 239-243. Includes references. (NAL Call No.: DNAL 79.8 W41).

0361

Response of wheat genotypes to trifluralin, triallate, and ethiazin.
 Garcia-Torres, L. Appleby, A.P. S.I. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 313-315. (NAL Call No.: DNAL 79.9 W52R).

0362

Response of winter wheat (*Triticum aestivum*) to herbicides.
 WEESA6. Wicks, G.A. Nordquist, P.T.; Schmidt, J.W. Champaign, Ill. : Weed Science Society of America. Weed science. Mar 1987. v. 35 (2). p. 259-262. Includes references. (NAL Call No.: DNAL 79.8 W41).

0363

Seedling tolerance to aluminum toxicity in hard red winter wheat germplasm.
 CRPSAY. Carver, B.F. Inskeep, W.P.; Wilson, N.P.; Westerman, R.L. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1988. v. 28 (3). p. 463-467. Includes references. (NAL Call No.: DNAL 64.8 C883).

0364

Selective action of the new herbicide 4-amino-6-(1,1-dimethylethyl)-3-(ethylthio)-1,2,4-triazin-5(4H)-one in different wheat, *Triticum aestivum*, cultivars.
 WEESA6. Fedtke, C. Schmidt, R.R. Champaign, Ill. : Weed Science Society of America. 14C-labeled 4-amino-6-(1,1-dimethylethyl)-3-(ethylthio)-1,2,4-triazin-5(4H)-one (ethiozin)3 was metabolized more rapidly in tolerant than in sensitive wheat, *Triticum aestivum* L., cultivars. After a 6-h herbicidal pulse, the main metabolites were conjugates at all incubation times up to 48 h. The levels of deaminated and dethioethylated metabolites never exceeded 4% of the extractable radioactivity and also did not differ between tolerant and sensitive plants. On the contrary, 92% of the extractable radioactivity was in conjugates after 24 h in the leaves of tolerant plants compared to 25% in the leaves of sensitive plants. The differently sensitive wheat cultivars conjugated metribuzin, 4-amino-6-(1,1-dimethylethyl)-3-methylthio)-1,2,4-triazin-5(4H)-one, at about half the rate that was observed with ethiozin. This finding may explain the fact that most wheat cultivars are more sensitive to metribuzin compared with ethiozin. Weed science. Sept 1988. v. 36 (5). p. 541-544. Includes references. (NAL Call No.: DNAL 79.8 W41).

0365

Shoot developmental properties associated with grain yield in winter wheat.
 CRPSAY. Shanahan, J.F. Donnelly, K.J.; Smith, D.H.; Smika, D.E. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1985. v. 25 (5). p. 770-775. Includes references. (NAL Call No.: DNAL 64.8 C883).

0366

Sticky-tape method to measure cultivar effect on wheat curl mite (*Acari: Eriophyidae*) populations in wheat spikes.
 JEENAI. Harvey, T.L. Martin, T.J. College Park, Md. : Entomological Society of America. Journal of economic entomology. Apr 1988. v. 81 (2). p. 731-734. ill. Includes references. (NAL Call No.: DNAL 421 J822).

0367

Stress tolerance and adaptation in spring wheat.
 CRPSAY. Bruckner, P.L. Frohberg, R.C. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1987. v. 27 (1). p. 31-36. Includes references. (NAL Call No.: DNAL 64.8 C883).

0368

Studies on the relation between certain physical characters of the wheat kernel and its chemical composition, and a proposed method for improving wheat by the selection of seed.
 KAEBA. Harper, J.N. Peter, A.M. Lexington : The Station. Bulletin - Kentucky, Agricultural Experiment Station. Documents available from: Agriculture Library, Agricultural Science Center - North, University of Kentucky, Lexington, Ky. 40546-0091. Feb 1904. (113). p. 1-12. plates. (NAL Call No.: DNAL 100 K41 (2)).

0369

Tetrazolium chloride test for spring wheat seedling vigor at low temperatures.
 CRPSAY. Johnston, W.J. Yusuf, H.A.; Konzak, C.F.; Marguire. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1986. v. 26 (1). p. 167-169. Includes 9 references. (NAL Call No.: DNAL 64.8 C883).

0370

Tolerance of eleven wheat varieties to two rates of AC 222,293.
 Mitich, L.W. Smith, N.L. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 216-217. (NAL Call No.: DNAL 79.9 W52R).

(PLANT BREEDING)

0371

Tolerance of spring barley and spring wheat cultivars to sulfonylurea herbicides.

Dial, M.J. Thill, D.C. S.1. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 311-312. (NAL Call No.: DNAL 79.9 W52R).

0372

Tolerance of 12 varieties of wheat to two rates of AC 222,293 as compared to difenzoquat.

Mitich, L.W. Smith, N.L. S.1. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 214-215. (NAL Call No.: DNAL 79.9 W52R).

0373

Triticale in commercial agriculture: progress and promise.

ADAGA. Skovmand, B. Fox, P.N.; Villareal, R.L. Orlando, Fla. : Academic Press. Advances in agronomy. Literature review. 1984. v. 37. p. 1-45. Includes references. (NAL Call No.: DNAL 30 AD9).

0374

Use of winter wheat (*Triticum aestivum*) cultivars and herbicides in aiding weed control in an ecofallow corn (*Zea mays*) rotation.

WEESA6. Ramsel, R.E. Wicks, G.A. Champaign, Ill. : Weed Science Society of America. Abstract: An experiment involving six winter wheat (*Triticum aestivum* L.) cultivars, an early-April herbicide application on wheat and on four dates after wheat harvest, and the growth of a subsequently planted corn (*Zea mays* L.) crop was conducted at North Platte, NE. 'Centurk 78' suppressed barnyardgrass *Echinochloa crus-galli* (L.) Beauv. ~ ECHCG more than 'Bennett' and 'Eagle' in the growing wheat and after wheat harvest in July, but there were no differences in weed yield among cultivars in corn planted 11 months later. Herbicides applied to the tillering wheat in early April improved weed control in wheat and the subsequent corn crop. Also, herbicides were applied 5, 25, 45, and 300 days after wheat harvest. Weed growth increased and soil water decreased as spraying dates were delayed. Herbicides applied 5 days after harvest did not maintain adequate weed control in the corn planted 11 months after wheat harvest and low corn yield resulted. Plots receiving herbicides 300 days after wheat harvest had the least soil water in the fall after wheat harvest but the best weed control in corn and highest corn yields because of better weed control in corn. Weed science. May 1988. v. 36 (3). p. 394-398. Includes references. (NAL Call No.: DNAL 79.8 W41).

0375

Variability in salt tolerance of four *triticale* lines at germination and emergence. CRPSAY. Norlyn, J.D. Epstein, E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1090-1092. Includes 19 references. (NAL Call No.: DNAL 64.8 C883).

0376

Variation in amounts of pyruvate, orthophosphate dikinase, and some other enzymes of the C4 pathway in some wheat species.

PLPFA. Aoyagi, K. Bassham, J.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1986. v. 82 (1). p. 96-98. Includes 17 references. (NAL Call No.: DNAL 450 P692).

0377

Variations in feeding behavior, fecundity, and damage of biotypes B and E of *Schizaphis graminum* (Homoptera: Aphididae) on three wheat genotypes.

EVETEX. Niassy, A. Ryan, J.D.; Peters, D.C. College Park, Md. : Entomological Society of America. Environmental entomology. Oct 1987. v. 16 (5). p. 1163-1168. Includes references. (NAL Call No.: DNAL QL461.E532).

0378

The war against hessian fly.

AGREA. Kelley, H. Washington, D.C. : The Administration. Agricultural research - U.S. Department of Agriculture, Agricultural Research Service. May 1985. v. 33 (5). p. 10-13. ill. (NAL Call No.: DNAL 1.98 AG84).

0379

Water relations in winter wheat as drought resistance indicators.

CRPSAY. Schonfeld, M.A. Johnson, R.C.; Carver, B.F.; Mornhinweg, D.W. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1988. v. 28 (3). p. 526-531. Includes references. (NAL Call No.: DNAL 64.8 C883).

0380

Wheat.

KAEBA. Roberts, G. Kinney, E.J. Lexington : The Station. Bulletin - Kentucky, Agricultural Experiment Station. Documents available from: Agriculture Library, Agricultural Science Center - North, University of Kentucky, Lexington, Ky. 40546-0091. July 1911. (155). p. 33-60. (NAL Call No.: DNAL 100 K41 (2)).

0381

Wheat.

KAEBA. Scherffius, W.H. Woosley, H. Lexington : The Station. Bulletin - Kentucky, Agricultural Experiment Station. Documents available from: Agriculture Library, Agricultural Science Center - North, University of Kentucky, Lexington, Ky. 40546-0091. June 1908. (135). p. 325-340. plates. (NAL Call No.: DNAL 100 K41 (2)).

0382

Wheat research.

Griffin, J.L. Habetz, R.J.; Regan, R.P. Crowley : The Station. Annual progress report - Louisiana, Agricultural Experiment Station. 1984. (76th). p. 363-366. (NAL Call No.: DNAL 100 L93 (3)).

0383

Wheat seedling responses to soil acidity and implications for subsoil rooting.

CSOSA2. Ritchey, K.D. Baligar, V.C.; Wright, R.J. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May/Sept 1988. v. 19 (7/12). p. 1285-1293. Includes references. (NAL Call No.: DNAL S590.C63).

0384

Winter survival response of winter wheat: tillage and cultivar selection.

AGJOAT. Cox, D.J. Larsen, J.K.; Brun, L.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1986. v. 78 (5). p. 795-801. Includes references. (NAL Call No.: DNAL 4 AM34P).

0385

Winter wheat cultivar response to SMY-1500 and metribuzin.

Stahlman, P. Krall, J.M.; Miller, S.D. S.I. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 355. (NAL Call No.: DNAL 79.9 W52R).

0386

Yield and grain quality responses of soft red winter wheat exposed to ozone during anthesis.

AGJOAT. Mulchi, C.L. Sammons, D.J.; Baenziger, P.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1986. v. 78 (4). p. 593-600. Includes references. (NAL Call No.: DNAL 4 AM34P).

0387

Wheat: development of cultivars resistant to aphids. Spanish.

OASPA. Arriaga, H. Corvallis, Or. : The Station. Special report - Oregon State University, Agricultural Experiment Station. Presented at the "Argentina International Wheat Symposium," November 7-12, 1983, Marcos Juarez, Argentina. English text p. 412-423. 1984? . (718). p. 131-143. (NAL Call No.: DNAL 100 OR3M).

PLANT ECOLOGY

0388

ATPases and membrane properties in relation to ecological differences.

NASSD. Kylin, A. Sommarin, M. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Molecular and cellular aspects of calcium in plant development / edited by A. J. Trewavas. 1986. v. 104. p. 261-268. Includes references. (NAL Call No.: DNAL QH301.N32).

0389

A crop moisture stress index for large areas and its application in the prediction of spring wheat phenology /P. C. Doraiswamy, D. R. Thompson ; Lockheed Engineering and Management Services Company, Inc. for National Aeronautics and Space Administration, Lyndon B. Johnson Space Center.

Doraiswamy, P. C. Thompson, D. R. Houston, Texas : Lyndon B. Johnson Space Center ; Springfield, Va : Available from NTIS, 1981. "March 1981"~ "Agristars"--Cover.~ "Supporting research SR-L1-04064"--Cover.~ Logos of U.S. government agencies on cover. 1 v. (various pagings) : ill. ; 28 cm. Bibliography: p. 5-1. (NAL Call No.: DNAL S597.W5D6).

0390

Dynamics of 6-methoxybenzoxazolinone in winter wheat: Effects of photoperiod and temperature.

JCECD. Epstein, W.W. Rowsemit, C.N.; Berger, P.J.; Negus, N.C. New York, N.Y. : Plenum Press. Journal of chemical ecology. Oct 1986. v. 12 (10). p. 2011-2020. Includes references. (NAL Call No.: DNAL QD415.A1J6).

0391

Heat damaged wheat /by D.A. Coleman and B.E. Rothgeb.

Coleman, D. A. Rothgeb, B. E. Washington : U.S. Dept. of Agriculture, 1927. Caption title. 32 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84Te no.6).

0392

Phytotoxicity of leachate from coastal bermudagrass roots on germination and root growth of grass and clover.

Nelson, L.R. Smith, G.R.; Bateman, C. College Station, Tex. : The Station. PR - Texas Agricultural Experiment Station. Oct 1984. (4253). p. 217-220. Includes references. (NAL Call No.: DNAL 100 T31P).

0393

Preplant tillage effects on population dynamics of soybean insect predators.

CRPSAY. Funderburk, J.E. Wright, D.L.; Teare, I.D. Madison, Wis. : Crop Science Society of America. Tillage operations modify soil habitats where many pests and their natural enemies reside at least during part of their life cycle. Bigeyed bugs (*Geocoris spp.*) and damsel bugs (*Nabis* and *Reduviulus spp.*) are common beneficial polyphagous insect predators in many crops. The objective of this research was to measure effects of tillage on population cycles and population size of those predators to aid in development of cultural IPM (integrated pest management) strategies for biological control of insect pests in soybean *Glycine max* (L.) Merr. double cropped with wheat (*Triticum aestivum* L.). The four tillage regimes used were no tillage and disk tillage with and without in-row subsoiling. Bigeyed bug nymphal and adult population cycles were similar for each tillage/subsoiling treatment. There were differences between years because in 1986 there was considerable overlap of generations, which was not observed in 1985. Disk tillage treatments had higher bigeyed bug nymphal and adult populations than the no tillage treatments in 1985 and 1986, but subsoiling did not influence population size. Damsel bug population cycles were also similar for all tillage/subsoiling treatments in both years. In 1985, populations of adult and nymphal damsel bugs were lower for no tillage without subsoiling than for disk tillage without subsoiling, disk tillage with subsoiling, or no tillage with subsoiling. Population sizes were similar for all treatments in 1986. Crop science. Nov/Dec 1988. v. 28 (6). p. 973-977. Includes references. (NAL Call No.: DNAL 64.8 C883).

PLANT STRUCTURE

0394

Agronomic comparisons among wheat lines nearly isogenic for three reduced-height genes.
CRPSAY. Allan, R.E. Madison, Wis. : Crop Science Society of America. *Crop science*. July/Aug 1986. v. 26 (4). p. 707-710. Includes references. (NAL Call No.: DNAL 64.8 C883).

0395

Biogenesis of thylakoid membranes is controlled by light intensity in the conditional chlorophyll b-deficient CD3 mutant of wheat.
JCLBA3. Allen, K.D. Duysen, M.E.; Staehelin, L.A. New York, N.Y. : Rockefeller University Press. *The Journal of cell biology*. Sept 1988. v. 107 (3). p. 907-919. ill. Includes references. (NAL Call No.: DNAL 442.8 J828).

0396

The Chemical composition of various wheats and factors influencing their composition /J.H. Shollenberger ... et al. .
Shollenberger, J. H. 1888-. Washington : Dept. of Agriculture, 1949. Caption title. 33 p. : maps ; 23 cm. (NAL Call No.: DNAL 1 Ag84Te no.995).

0397

Development of the young wheat spike: a SEM study of Chinese Spring wheat.
AJBOA. Gardner, J.S. Hess, W.M.; Trione, E.J. Baltimore, Md. : Botanical Society of America. *American journal of botany*. Apr 1985. v. 72 (4). p. 548-559. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

0398

Effect of daylength insensitivity on agronomic traits and grain protein in hard red spring wheat.
CRPSAY. Busch, R.H. Elsayed, F.A.; Heiner, R.E. Madison, Wis. : Crop Science Society of America. *Crop science*. Nov/Dec 1984. v. 24 (6). p. 1106-1109. Includes 7 references. (NAL Call No.: DNAL 64.8 C883).

0399

Effects of air temperature on head development in spring wheat.
NDFRA. Frank, A.B. Bauer, A.; Black, A.L. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. Jan/Feb 1988. v. 45 (4). p. 16-18. ill. Includes references. (NAL Call No.: DNAL 100 N813B).

0400

Genetic studies of crown depth and subcrown internode length in winter wheat.
CRPSAY. Poulos, J.M. Allan, R.E. Madison, Wis. : Crop Science Society of America. *Crop science*. Nov/Dec 1987. v. 27 (6). p. 1109-1113. Includes references. (NAL Call No.: DNAL 64.8 C883).

0401

Herbicide-induced interactions between cereal roots and fluorescent *Pseudomonas* spp.
NASSD. Greaves, M.P. Sargent, J.A.; Whippes, J.M. New York, N.Y. : Plenum Press. *NATO advanced science institutes series : Series A : Life sciences*. In the series *analytic: Iron, siderophores, and plant diseases / edited by T.R. Swinburne. Paper presented at the "NATO Advanced Research Workshop," July 1-5, 1985, Wye, Kent, England. 1986. v. 117. p. 189-201. ill. Includes references. (NAL Call No.: DNAL QH301.N32).*

0402

Leaf area and dry matter accumulation of wheat following forage removal.
AGJDAT. Dunphy, D.J. Holt, E.C.; McDaniel, M.E. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Nov/Dec 1984. v. 76 (6). p. 871-874. Includes 24 references. (NAL Call No.: DNAL 4 AM34P).

0403

Spectral response of architecturally different wheat canopies.
RSEEA. Jackson, R.D. Pinter, P.J. Jr. New York, N.Y. : Elsevier Science Publishing. *Remote sensing of environment. Includes statistical data*. Aug 1986. v. 20 (1). p. 43-56. Includes references. (NAL Call No.: DNAL Q184.R4).

0404

Sucrose synthase activity in developing wheat endosperms differing in maximum weight.
PLPHA. Dale, E.M. Housley, T.L. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Sept 1986. v. 82 (1). p. 7-10. Includes 22 references. (NAL Call No.: DNAL 450 P692).

PLANT NUTRITION

0405

Alternative procedure for total phosphorus determination in plant tissue.

CSOSA2. Raun, W.R. Olson, R.A.; Sander, D.H.; Westerman, R.L. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May 1987. v. 18 (5). p. 543-557. Includes references. (NAL Call No.: DNAL S590.C63).

0406

Ammonia volatilization from spring wheat plants.

AGUDAT. Parton, W.J. Morgan, J.A.; Altenhofen, J.M.; Harper, L.A. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1988. v. 80 (3). p. 419-425. Includes references. (NAL Call No.: DNAL 4 AM34P).

0407

An application of the Maas-Hoffman salinity response model for boron toxicity.

SSSJD4. Bingham, F.T. Strong, J.E.; Rhoades, J.D.; Keren, R. Madison, Wis. : The Society. Journal - Soil Science Society of America. May/June 1985. v. 49 (3). p. 672-674. ill. Includes references. (NAL Call No.: DNAL 56.9 S03).

0408

Beneficial effects of nickel on plant growth.

JPNUDS. Brown, P.H. Welch, R.M.; Cary, E.E.; Checkai, R.T. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium." August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 2125-2135. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

0409

Characterization of root hair cell walls as potential barriers to the infection of plants by rhizobia. The carbohydrate component.

PLPFA. Mort, A.J. Grover, P.B. Jr. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1988. v. 86 (2). p. 638-641. Includes references. (NAL Call No.: DNAL 450 P692).

0410

The Chemical composition of various wheats and factors influencing their composition /J.H. Shollenberger ... et al. .

Shollenberger, J. H. 1888-. Washington : Dept. of Agriculture, 1949. Caption title. 33 p. : maps ; 23 cm. (NAL Call No.: DNAL 1 Ag84Te no. 995).

0411

Competition among tillers in winter wheat: consequences for growth and development of the crop.

NASSD. Masle, J. New York, N.Y. : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. Paper presented at the "Workshop on Wheat Growth and Modelling," April 9-12, 1984, Bristol, United Kingdom. 1985. v. 86. p. 33-54. ill. Includes references. (NAL Call No.: DNAL QH301.N32).

0412

CO₂-enrichment effects on wheat yield and physiology.

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SSSJD4. Keren, R. Bingham, F.T.; Rhoades, J.D. Madison, Wis. : The Society. Journal - Soil Science Society of America. Nov/Dec 1985. v. 49 (6). p. 1466-1470. ill. Includes references. (NAL Call No.: DNAL 56.9 S03).

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 SSSJD4. Sander, D.H. Eghball, B. Madison, Wis. : The Society. Five field experiments were conducted over 3 yr (1983-1985) to evaluate the effect of P fertilizer particle size on winter wheat (*Triticum aestivum L.*) yield and P uptake. In 1983, an introductory experiment indicated that the P fertilizer particle size could greatly affect fertilizer P effectiveness. Studies in 1984 and 1985 confirmed these observations. In these studies ammonium polyphosphate (11-24-0, N-P-K), at particle weights of 0.00019, 0.0009, 0.025, 0.93, and 22 mg were applied at P rates of 8.4, 16.8, and 25.2 kg P ha⁻¹ on four different soils. Wheat grain yields were increased significantly by applied P on all four soils. Grain yields were affected by P fertilizer particle size only, however, on the Ascalon and Holdrege soils (Aridic and Typic Argiustoll, respectively) where yield increases from applied P were greatest. Maximum grain yield occurred at approximately the intermediate particle size studied (0.025 mg), although optimum particle size was dependent on P rate. As the P rate increased, particle size became less of a factor influencing fertilizer effectiveness. Wheat grain yield at the 8.4-kg ha⁻¹ P rate was 0.31 Mg ha⁻¹ less for the 22-mg particle compared to the 0.025 mg particle. Calculations indicated that the 22-mg fertilizer particles had an average distance of 2.8 cm from one another in the band area, compared to 0.003 cm or a continuous band for the 0.025-mg particles. Phosphorus uptake and other yield components generally paralleled the results with grain yield. Fertilizer P efficiency in terms of fertilizer P uptake, reached a maximum of 47% with a particle size of 0.15 mg and a application rate of 8.4 kg P ha⁻¹ on the Holdrege soil. This was a 20% increase in efficiency over a normal farm fertilizer size of 20-mg particle 1. While optimum fertilizer size probably ranges from 0.025 to 1 mg per particle, the optimum size in these experiments in terms of both yield and fertilizer efficiency was generally less than the 20-mg particle size. Soil Science Society of America journal. May/June 1988. v. 52 (3). p. 868-873. Includes references. (NAL Call No.: DNAL 56.9 S03).

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 CSOSA2. Yao, J. Barber, S.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. 1986. v. 17 (8). p. 819-827. Includes 9 references. (NAL Call No.: DNAL S590.C63).

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 CSOSA2. Reneau, R.B. Jr. Brann, D.E.; Donohue, S.J. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Feb 1986. v. 17 (2). p. 149-158. Includes 15 references. (NAL Call No.: DNAL S590.C63).

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JPNUDS. Lu, N.P. Barber, S.A. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1985. v. 8 (9). p. 799-809. Includes 15 references. (NAL Call No.: DNAL QK867.J67).

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0462

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AGJDAT. Bauer, A. Frank, A.B.; Black, A.L. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1987. v. 79 (5). p. 852-858. Includes references. (NAL Call No.: DNAL 4 AM34P).

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AGJDAT. Allen, S.G. Taylor, G.A.; Martin, J.M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan/Feb 1986. v. 78 (1). p. 63-66. Includes 21 references. (NAL Call No.: DNAL 4 AM34P).

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 CSOSA2. Taylor, G.J. New York, N.Y. : Marcel Dekker. *Communications in soil science and plant analysis*. May/Sept 1988. v. 19 (7/12). p. 1217-1227. Includes references. (NAL Call No.: DNAL S590.C63).

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0483

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0487

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CRPSAY. Kiyomoto, R.K. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1987. v. 27 (4). p. 746-752. Includes references. (NAL Call No.: DNAL 64.8 C883).

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AGJOAT. Stark, J.C. Longley, T.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1986. v. 78 (5). p. 892-896. Includes references. (NAL Call No.: DNAL 4 AM34P).

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CECHAF. Macri, L.J. Ballance, G.M.; Larter, E.N. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. May/June 1986. v. 63 (3). p. 267-270. Includes references. (NAL Call No.: DNAL 59.8 C33).

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PLPFA. Pernollet, J.C. Vaillant, V. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1984. v. 76 (1). p. 187-190. ill. Includes 21 references. (NAL Call No.: DNAL 450 P692).

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JPGRDI. Dao, T.H. New York, N.Y. : Springer. Journal of plant growth regulation. Evaluation in the context of a forage-livestock-grain production system. 1987. v. 6 (4). p. 183-191. Includes references. (NAL Call No.: DNAL QK745.J6).

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EVHPA. Kaneta, M. Hikichi, H.; Endo, S.; Sugiyama, N. Research Triangle Park, N.C. : National Institute of Environmental Health Sciences. E H P Environmental health perspectives. Mar 1986. v. 65. p. 33-37. Includes 13 references. (NAL Call No.: DNAL RA565.A1E54).

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PLPFA. Duysen, M.E. Freeman, T.P.; Williams, N.D.; Huckle, L.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1985. v. 78 (3). p. 531-536. ill. Includes 22 references. (NAL Call No.: DNAL 450 P692).

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PLPFA. Singh, S.P. Paleg, L.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1986. v. 82 (3). p. 685-687. Includes references. (NAL Call No.: DNAL 450 P692).

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NASSD. Masle, J. New York, N.Y. : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. Paper presented at the "Workshop on Wheat Growth and Modelling," April 9-12, 1984, Bristol, United Kingdom. 1985. v. 86. p. 33-54. ill. Includes references. (NAL Call No.: DNAL QH301.N32).

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AGUOAT. O'Deen, W.A. Porter, L.K. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1986. v. 78 (4). p. 746-749. ill. Includes references. (NAL Call No.: DNAL 4 AM34P).

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PLPFA. Schaefer, N.L. Trickett, E.S.; Ceresa, A.; Barrs, H.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 45-49. ill. Includes 22 references. (NAL Call No.: DNAL 450 P692).

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CRPSAY. Havelka, U.D. Wittenbach, V.A.; Boyle, M.G. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1163-1168. Includes 17 references. (NAL Call No.: DNAL 64.8 C883).

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JEVQAA. Mays, D.A. Mortvedt, J.J. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Jan/Mar 1986. v. 15 (1). p. 78-81. Includes references. (NAL Call No.: DNAL QH540.J6).

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PLPFA. Rendina, A.R. Felts, J.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Apr 1988. v. 86 (4). p. 983-986. Includes references. (NAL Call No.: DNAL 450 P692).

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JPGRDI. Kaminek, M. Vanek, T.; Motyka, V. New York, N.Y. : Springer. Journal of plant growth regulation. 1987. v. 6 (2). p. 113-120. Includes references. (NAL Call No.: DNAL QK745.J6).

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PLPFA. McCashin, B.G. Cossins, E.A.; Canvin, D.T. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1988. v. 87 (1). p. 155-161. Includes references. (NAL

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Dependence of in vivo ethylene production rate on 1-aminocyclopropane-1-carboxylic acid content and oxygen concentrations.

PLPNA. Yip, W.K. Jiao, X.Z.; Yang, S.F. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1988. v. 88 (3). p. 553-558. Includes references. (NAL Call No.: DNAL 450 P692).

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Dalrymple, D.G. Ames, Iowa : American Agricultural Economics Association. American journal of agricultural economics. Paper presented at the annual meeting of the American Agricultural Economics Association, August 4-7, 1985, Ames, Iowa. Dec 1985. v. 67 (5). p. 1067-1073. (NAL Call No.: DNAL 280.8 J822).

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AJBOA. Gardner, J.S. Hess, W.M.; Trione, E.J. Baltimore, Md. : Botanical Society of America. American journal of botany. Apr 1985. v. 72 (4). p. 548-559. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Differential responses of landrace and improved spring wheat genotypes to stress environments.

CRPSAY. Ehdaie, B. Waines, J.G.; Hall, A.E. Madison, Wis. : Crop Science Society of America. Drought and heat stress are major environmental factors reducing grain production of rainfed wheat (*Triticum aestivum* L.) in semiarid regions. The objective of this research was to identify bread wheats with improved adaptation to hot, dry environments. Field studies were conducted to measure effects of terminal drought and heat stress on duration of developmental phases, grain yield, and yield related traits of day-length insensitive spring wheats. Fifteen genotypes, including lines from landraces of southwestern Iran and improved cultivars from Iran and California, were grown in a nonstress and three artificially imposed stress environments at Moreno Valley, CA, in 1986. Genotype X environment interactions were significant for grain yield and its components. Stress susceptibility of each genotype was estimated using a calculated index based on grain yield. Landrace genotypes and improved cultivars that were evaluated exhibited a wide range in stress susceptibility and adaptation to stress environments. Landrace genotypes and cultivars did not vary for mean stress-susceptibility index values. Landrace genotypes generally had lower yield potential than the cultivars. The stress-susceptibility index identified some genotypes that did not have outstanding yield performance per se in stress environments due to low yield potential and others that had high average yield in stress conditions. Stress susceptibility and yield potential were not associated, indicating that they may be independent components which both contribute to adaptation to stress environments. The stress-susceptibility index was negatively correlated with number of grains per head, grain weight, grain yield, and harvest index under stress conditions, indicating selection for these characters in stress environments might result in decreased susceptibility to stress. Crop science. Sept/Oct 1988. v. 28 (5). p. 838-842. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PLPNA. Schnarrenberger, C. Kruger, I. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1986. v. 80 (2). p. 301-304. Includes 30 references. (NAL Call No.: DNAL 450 P692).

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CRPSAY. Heberer, J.A. Below, F.E.; Hageman, R.H. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1117-1119. Includes 17 references. (NAL Call

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JCECD. Epstein, W.W. Rowsemit, C.N.; Berger, P.J.; Negus, N.C. New York, N.Y. : Plenum Press. Journal of chemical ecology. Oct 1986. v. 12 (10). p. 2011-2020. Includes references. (NAL Call No.: DNAL QD415.A1J6).

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PLPHA. Necchi, A. Pogna, N.E.; Mapelli, S. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1987. v. 84 (4). p. 1378-1384. iii. Includes references. (NAL Call No.: DNAL 450 P692).

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Effect of a freeze-thaw cycle on properties of microsomal membranes from wheat.
PLPHA. Borochov, A. Walker, M.A.; Kendall, E.J.; Pauls, K.P.; McKersie, B.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1987. v. 84 (1). p. 131-134. Includes references. (NAL Call No.: DNAL 450 P692).

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Effect of cyclic AMP and cyclic GMP on the autophosphorylation of elongation factor 1 from wheat embryos.
BBRCA. Ejiri, S. Honda, H. New York, N.Y. : Academic Press. Biochemical and biophysical research communications. Apr 16, 1985. v. 128 (1). p. 53-60. Includes 17 references. (NAL Call No.: DNAL 442.8 B5236).

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Effect of daylength insensitivity on agronomic traits and grain protein in hard red spring wheat.
CRPSAY. Busch, R.H. Elsayed, F.A.; Heiner, R.E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1106-1109. Includes 7 references. (NAL Call No.: DNAL 64.8 C883).

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PNWSB. Devlin, R.M. Koszanski, Z.K. Beltsville, Md. : The Society. Proceedings of the ... annual meeting - Northeastern Weed Science Society. 1986. v. 40. p. 115-119. Includes references. (NAL Call No.: DNAL 79.9 N814).

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The effect of foliar application of elemental sulphur on the accumulation of protein-incorporated amino acids in developing wheat grain.
Legris-Delaporte, S. Landry, J. New Brunswick, N.J. : The Service. FS - Cooperative Extension Service, Cook College. Sept 1987. v. 6 (2). p. 119-123. Includes references. (NAL Call No.: DNAL S544.3.N5F7).

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Effect of freezing temperatures on the protein-synthesizing apparatus of frost-hardened winter wheat.
SOPPA. Bocharova, M.A. Klyachko, N.L.; Trunova, T.I.; Kulieva, O.N. New York, N.Y. : Consultants Bureau. Soviet plant physiology. Translated from: Fiziologija rastenii, v. 34 (3), 1987, p. 513-517. (450 F58). Nov 1987. v. 34 (3,pt.1). p. 413-417. Includes references. (NAL Call No.: DNAL 450 F58AE).

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PLPHA. Vigh, L. Horvath, I.; Hasselt, P.R. van; Kuiper, P.J.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1985. v. 79 (3). p. 756-759. Includes 17 references. (NAL Call No.: DNAL 450 P692).

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JEENAI. Burton, R.L. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1986. v. 79 (3). p. 633-636. Includes references. (NAL Call No.: DNAL 421 J822).

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JRMGA. Svejcar, T. Christiansen, S. Denver, Colo. : Society for Range Management. Journal of range management. May 1987. v. 40 (3). p. 285-287. Includes references. (NAL Call No.: DNAL 60.18 J82).

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Effect of low temperature and calcium on survival and membrane properties of isolated winter wheat cells.

PLPHA. Pomeroy, M.K. Andrews, C.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1985. v. 78 (3). p. 484-488. Includes 28 references. (NAL Call No.: DNAL 450 P692).

0549

Effect of mefluidide on growth and heading of *Triticum aestivum* L.

JPGRDI. Undersander, D.J. New York, N.Y. : Springer. Journal of plant growth regulation. 1986. v. 5 (2). p. 85-89. Includes references. (NAL Call No.: DNAL QK745.J6).

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Effect of N fertilizer on protein content of grain, straw, and chaff tissues in soft white winter wheat.

AGJOAT. Glenn, D.M. Carey, A.; Bolton, F.E.; Vavra, M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1985. v. 77 (2). p. 229-232. Includes 18 references. (NAL Call No.: DNAL 4 AM34P).

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Effect of nitrogen level and time of application on the protein content and amino acid composition of irrigated wheats.

JAFCAU. Okoh, P.N. Olugbemi, L.B.; Abed, S.M. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1985. v. 33 (4). p. 688-691. Includes references. (NAL Call No.: DNAL 381 J8223).

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CSOSA2. Yao, J. Barber, S.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. 1986. v. 17 (8). p. 819-827. Includes 9 references. (NAL Call No.: DNAL S590.C63).

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Effect of osmotic stress on ion transport processes and phospholipid composition of wheat (*Triticum aestivum* L.) mitochondria.

PLPHA. Klein, R.R. Burke, J.J.; Wilson, R.F. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1986. v. 82 (4). p. 936-941. Includes references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Azcon-Bieto, J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 379-382. Includes 29 references. (NAL Call No.: DNAL 450 P692).

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Effect of paclobutrazol and flurprimidol on the germination and growth of wheat and radish.

PPGGD. Devlin, R.M. Koszanski, Z.K. Lake Alfred : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1985. (12th). p. 237-242. Includes references. (NAL Call No.: DNAL SB128.P5).

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PPGGD. Devlin, R.M. Koszanski, Z.K. Lake Alfred, Fla. : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1987. (14th). p. 125-129. Includes references. (NAL Call No.: DNAL SB128.P5).

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Effect of salinity on grain yield and quality, vegetative growth, and germination of semi-dwarf and durum wheat.

AGJOAT. Francois, L.E. Maas, E.V.; Donovan, T.J.; Youngs, V.L. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1986. v. 78 (6). p. 1053-1058. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Effect of soil moisture stress on leaf area index, evapotranspiration and modeled soil evaporation and transpiration.

TAEEA. Sammis, T.W. Williams, S.; Smeal, D.; Kallsen, C.E. St. Joseph, Mich. : The Society. Transactions of the ASAE - American Society of Agricultural Engineers. July/Aug 1986. v. 29 (4). p. 956-961. Includes references. (NAL Call No.: DNAL 290.9 AM32T).

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0559

The effect of some herbicides on wheat.
PYTLA. Kord, M. Khalil, A. Corvallis, Or. : Harold N. and Alma L. Moldenke. *Phylogia*. Jan 1987. v. 62 (7). p. 434-440. Includes references. (NAL Call No.: DNAL 450 P563).

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Effect of tagetitoxin on the levels of ribulose 1,5-bisphosphate carboxylase, ribosomes, and RNA in plastids of wheat leaves.
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CRPSAY. Reddy, L.V. Metzger, R.J.; Ching, T.M. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1985. v. 25 (3). p. 455-458. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PLPHA. Gamble, P.E. Burke, J.J. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Nov 1984. v. 76 (3). p. 615-621. ill. Includes 20 references. (NAL Call No.: DNAL 450 P692).

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CRPSAY. Frank, A.B. Bauer, A.; Black, A.L. Madison, Wis. : Crop Science Society of America. *Crop science*. Jan/Feb 1987. v. 27 (1). p. 113-116. Includes references. (NAL Call No.: DNAL 64.8 C883).

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NDFRA. Frank, A.B. Bauer, A.; Black, A.L. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. Jan/Feb 1988. v. 45 (4). p. 16-18. ill. Includes references. (NAL Call No.: DNAL 100 N813B).

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PLPHA. Nadeau, P. Delaney, S.; Chouinard, L. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. May 1987. v. 84 (1). p. 73-77. Includes references. (NAL Call No.: DNAL 450 P692).

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AGJOAT. Gerik, T.J. Morrison, J.E. Jr.; Chichester, F.W. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. May/June 1987. v. 79 (3). p. 434-438. Includes references. (NAL Call No.: DNAL 4 AM34P).

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PLPHA. Morgan, J.A. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Jan 1985. v. 80 (1). p. 52-58. Includes 30 references. (NAL Call No.: DNAL 450 P692).

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PLPFA. Masle, J. Farquhar, G.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1988. v. 86 (1). p. 32-38. Includes references. (NAL Call No.: DNAL 450 P692).

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Effects of sulfur dioxide and ambient ozone on winter wheat and lettuce.
JEVQAA. Olszyk, D.M. Bytnerowicz, A.; Kats, G.; Dawson, P.J.; Wolf, J.; Thompson, C.R. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1986. v. 15 (4). p. 363-369. Includes references. (NAL Call No.: DNAL QH540.J6).

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CRPSAY. Lafond, G.P. Baker, R.J. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 563-567. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PNASA. Bremner, J.M. Krogmeier, M.J. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. July 1988. v. 85 (13). p. 4601-4604. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

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PLPFA. Taller, B.J. Murai, N.; Skoog, F. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Apr 1987. v. 83 (4). p. 755-760. Includes references. (NAL Call No.: DNAL 450 P692).

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Lin, J.T. Stafford, A.E. New York : Plenum Press, c1987. The metabolism structure, and function of plant lipids / edited by Paul K. Stumpf, J. Brian Mudd, and W. David Nes. Paper presented at the "Seventh International Symposium on Plant Lipids," held July 27-August 1, 1986, University of California, Davis, California. p. 127-129. Includes references. (NAL Call No.: DNAL QK898.L56155 1986).

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CRPSAY. Papenfuss, J.M. Carman, J.G. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 588-593. Includes references. (NAL Call No.: DNAL 64.8 C883).

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AGJOAT. Hagemann, M.G. Ciha, A.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1987. v. 79 (2). p. 192-196. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Establishment of red fescue seed crops with cereal companion crops. I. Morphological responses.
CRPSAY. Chastain, T.G. Grabe, D.F. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 308-312. Includes references. (NAL Call No.: DNAL 64.8

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Estimation of consumptive use of water for wheat under optimum management conditions /by Ghulam Haider, M.A.R. Farooqi and C.J. deMooy.
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ABBIA. Lamattina, L. Pinedo, M.; Yudi, V.P.; Pont Lezica, R.F.; Conde, R.D. Duluth, Minn. : Academic Press. Archives of biochemistry and biophysics. Jan 1988. v. 260 (1). p. 285-292. Includes references. (NAL Call No.: DNAL 381 AR2).

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JAFCAU. Starks, T.L. Johnson, P.E. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Jan/Feb 1986. v. 34 (1). p. 23-26. Includes references. (NAL Call No.: DNAL 381 J8223).

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Bensen, R. Columbia, Mo. : The Interdisciplinary Plant Biochemistry and Physiology Program. Current topics in plant biochemistry and physiology : Proceedings of the ... Plant Biochemistry and Physiology Symposium held at the University of Missouri, Columbia. 1985. v. 4. p. 222. ill. Includes 5 references. (NAL Call No.: DNAL QK861.P55).

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Expression of tolerance of sodium, potassium, magnesium, chlorine, and sulfur dioxide ions and sea water in the amphiploid of *Triticum aestivum* X *Elytrigia elongata*.

CRPSAY. Dvorak, J. Ross, K. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 658-660. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Biryukov, S.V. Krestinkov, I.S. New York, N.Y. : Allerton Press. Soviet agricultural sciences. Translated from: Vsesoiuznaia akademia sel'skokhoziaistvennykh nauk, Doklady, p. 13-15. (20 AK1). 1984. (12). p. 21-24. Includes 5 references. (NAL Call No.: DNAL S1.S68).

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FRHQA. Olson, R.A. Hanway, D.G.; Dreier, A.F. Lincoln, Neb. : The Station. Farm, ranch and home quarterly - Nebraska Agricultural Experiment Station. Fall 1960. (QR-16). 4 p. (NAL Call No.: DNAL 100 N27N).

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MXMRA. Rehm, G.W. Fenster, W.E.; Evans, S.; Lamb, J. St. Paul : The Station. Miscellaneous publication - University of Minnesota, Agricultural Experiment Station. 1985. (2, rev.). p. 191. (NAL Call No.: DNAL S1.M52).

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Williams, W.P. Horvath, I.; Quinn, P.J.; Thomas, P.G.; Vigh, L. New York : Plenum Press, c1987. The metabolism structure, and function of plant lipids / edited by Paul K. Stumpf, J. Brian Mudd, and W. David Nes. Paper presented at the "Seventh International Symposium on Plant Lipids," held July 27-August 1, 1986, University of California, Davis, California. p. 201-203. Includes references. (NAL Call No.: DNAL QK898.L56I55 1986).

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A fresh look at the wheat coleoptile bioassay.

PPGGD. Cutler, H.G. Lake Alfred : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. Literature review. 1984. (11th). p. 1-9. Includes references. (NAL Call No.: DNAL SB128.P5).

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Galactose inhibition of auxin-induced growth of mono- and dicotyledonous plants.

PLPRA. Yamamoto, R. Inouhe, M.; Masuda, Y. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Apr 1988. v. 86 (4). p. 1223-1227. Includes references. (NAL Call No.: DNAL 450 P692).

0594

Genetic control of cold hardiness and vernalization requirement in winter wheat.

CRPSAY. Brule-Babel, A.L. Fowler, D.B. Madison, Wis. : Crop Science Society of America. A high level of cold hardiness is essential to ensure consistent overwintering of wheat (*Triticum aestivum L.*) in the Northern Great Plains region of North America. Consequently, a clear understanding of the genetic control of cold hardiness would facilitate plant breeding efforts directed at cultivar improvement for this area. Although several genetic studies have been conducted, there is not a general consensus on the mode of gene action controlling the expression of cold hardiness in wheat. This study used one spring and four winter cultivars representing a wide range of cold hardiness potential to investigate the mode of inheritance and interaction of cold hardiness, determined in a controlled environment that allowed for maximum expression of cold hardiness potential, and vernalization requirement in wheat. Differences in growth habit between parental cultivars were controlled by the *Vrn1* gene. Cold hardiness, estimated as the temperature at which 50% of the plant population was killed (LT50), was controlled by genes with either dominant or additive effects. At least one dominant gene was associated with cold hardiness differences between spring and winter wheat, while genes with mainly additive effects determined differences in cold hardiness among cultivars with the winter growth habit. Broad sense heritability estimates for LT50 in the controlled environment considered ranged from 0 to 88% with most estimates exceeding 50%. In the F2-derived F3 generation, hardy transgressive segregates were most common in crosses between relatively nonhardy cultivars, but no segregates were significantly hardier than the hardiest parental cultivar. Lack of a vernalization requirement did not hinder the development of cold hardiness; however, distribution of F2-derived F3 lines provided evidence of possible genetic linkage or pleiotropism between the gene segregating for growth habit and a gene or genes controlling cold hardiness. *Crop science*. Nov/Dec 1988. v. 28 (6). p. 879-884. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Genetic studies of crown depth and subcrown internode length in winter wheat.

CRPSAY. Poulos, J.M. Allan, R.E. Madison, Wis. : Crop Science Society of America. *Crop science*. Nov/Dec 1987. v. 27 (6). p. 1109-1113. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Genetic variation for nitrogen assimilation and translocation in wheat. III. Nitrogen translocation in relation to grain yield and protein.

CRPSAY. Cox, M.C. Qualset, C.O.; Rains, D.W. Madison, Wis. : Crop Science Society of America. *Crop science*. July/Aug 1986. v. 26 (4). p. 737-740. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Gabor, G. Simon-Sarkadi, L.; Bekes, F.; Erdei, L. Hingham, Mass. : Martinus Nijhoff Publishers. *Advances in agricultural biotechnology*. 1986. (20). p. 170-176. Includes references. (NAL Call No.: DNAL S494.5.B563A39).

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Genotypic differences in tolerance of ice encasement, low temperature flooding, and freezing in winter wheat.

CRPSAY. McKersie, B.D. Hunt, L.A. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1987. v. 27 (5). p. 860-863. Includes references. (NAL Call No.: DNAL 64.8 C883).

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A gibberellin responsive wheat gene has homology to yeast carboxypeptidase Y.

JBCHA3. Baulcombe, D.C. Barker, R.F.; Jarvis, M.G. Baltimore, Md. : American Society for Biochemistry and Molecular Biology. *The Journal of biological chemistry*. Oct 5, 1987. v. 262 (28). p. 13726-13735. ill. Includes references. (NAL Call No.: DNAL 381 J824).

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Glycoproteins at the cell surface in cold hardy and cold tender wheat (*Triticum aestivum L.*).

Jian, L.C. Sun, L.H.; Sun, D.L. New York : Alan R. Liss. *Plant biology*. In the series *analytic: Plant Cold Hardiness* / edited by P.H. Li. *Proceedings of an International Seminar*,

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Grain growth of wheat and its limitation by carbohydrate and nitrogen supply.

NASSD. Spiertz, J.H.J. Vos, J. New York, N.Y. : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. Paper presented at the "Workshop on Wheat Growth and Modelling," April 9-12, 1984, Bristol, United Kingdom. 1985. v. 86. p. 129-141. Includes references. (NAL Call No.: DNAL QH301.N32).

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CRPSAY. Rechel, E.A. Walsh, M.A. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1068-1073. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Growth and canopy carbon dioxide exchange rate of spring wheat as affected by nitrogen status.
CRPSAY. Morgan, J.A. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1988. v. 28 (1). p. 95-100. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Growth and chlorophyll, mineral, and total amino acid composition of tomato and wheat plants in relation to nitrogen and iron nutrition. II. Chlorophyll content and total amino acid composition.
JPNUDS. Mohamed, A.A. El-Sokkary, I.H.; Tucker, T.C. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (6). p. 713-731. Includes references. (NAL Call No.: DNAL QK867.J67).

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Growth, development, and physiology.

AGRYA. Simmons, S.R. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (13). p. 77-113. Includes references. (NAL Call No.: DNAL 4 AM392).

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Growth regulator effects on wheat culm nonstructural and structural carbohydrates and lignin.

CRPSAY. Knapp, J.S. Harms, C.L.; Volenec, J.J. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1987. v. 27 (6). p. 1201-1205. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Growth responses of green and yellow foxtail (*Setaria viridis* and *Setaria lutescens*) to shade.

WEESA6. Bubar, C.J. Morison, I.N. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1984. v. 32 (6). p. 774-780. ill. Includes 16 references. (NAL Call No.: DNAL 79.8 W41).

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H⁺ extrusion and potassium uptake associated with potential hyperpolarization in maize and wheat root segments treated with permeant weak acids.

PLPFA. Romani, G. Marre, M.T.; Bellando, M.; Alloatti, G.; Marre, E. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1985. v. 79 (3). p. 734-739. Includes 18 references. (NAL Call No.: DNAL 450 P692).

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Harvest index of spring wheat as influenced by water stress.

NASSD. Hanks, R.J. Sorensen, R.B. New York, N.Y. : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. Paper presented at the "Workshop on Wheat Growth and Modelling," April 9-12, 1984, Bristol, United Kingdom. 1985. v. 86. p. 205-209. Includes references. (NAL Call No.: DNAL QH301.N32).

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Heat inactivation of starch synthase in wheat endosperm tissue.

PLPFA. Rijven, A.H.G.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 448-453. Includes 17 references. (NAL Call No.: DNAL 450 P692).

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Herbicide-induced interactions between cereal roots and fluorescent *Pseudomonas* spp.

NASSD. Greaves, M.P. Sargent, J.A.; Whipps, J.M. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Iron, siderophores, and plant diseases / edited by T.R. Swinburne. Paper presented at the "NATO Advanced Research Workshop," July 1-5, 1985, Wye, Kent, England. 1986. v. 117. p. 189-201. ill. Includes references. (NAL Call No.: DNAL QH301.N32).

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AGJOAT. Howey, S.J. Spilde, L.A.; Edwards, I.B.; Laskar, W.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1988. v. 80 (3). p. 533-536. Includes references. (NAL Call No.: DNAL 4 AM34P).

0613

Hydrolytic activation versus oxidative degradation of assert herbicide, and imidazolinone aryl-carboxylate, in susceptible wild oat versus tolerant corn and wheat.

PCBPB. Brown, M.A. Chiu, T.Y.; Miller, P. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. Jan 1987. v. 27 (1). p. 24-29. Includes references. (NAL Call No.: DNAL SB951.P49).

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Ice-encasement injury to microsomal membranes isolated from winter wheat crowns. II. Changes in membrane lipids during ice encasement.

PLPBA. Hetherington, P.R. Broughton, H.L.; McKersie, B.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1988. v. 86 (3). p. 740-743. Includes references. (NAL Call No.: DNAL 450 P692).

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Identification of cytokinins in young wheat spikes (*Triticum aestivum* cv. Chinese Spring).

JPGRD. Sayavedra-Soto, L.A. Durley, R.C.; Trione, E.J.; Morris, R.O. New York, N.Y. : Springer. Journal of plant growth regulation. 1988. v. 7 (3). p. 169-178. Includes references. (NAL Call No.: DNAL QK745.J6).

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Identification of L-tryptophan as an endogenous inhibitor of embryo germination in white wheat.

PLPBA. Morris, C.F. Mueller, D.D.; Faubion, J.M.; Paulsen, G.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1988. v. 88 (2). p. 435-440. Includes references. (NAL Call No.: DNAL 450 P692).

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Identification of two messenger RNA cap binding proteins in wheat germ. Evidence that the 28-kDa subunit of eIF-4B and the 26-kDa subunit of eIF-4F are antigenically distinct polypeptides.

JBCHA3. Browning, K.S. Lax, S.R.; Ravel, J.M. Baltimore, Md. : American Society of Biological Chemists. The Journal of biological chemistry. Aug 15, 1987. v. 262 (23). p. 11228-11232. ill. Includes references. (NAL Call No.: DNAL 381 J824).

0618

Impact of the English grain aphid, *Sitobion avenae* (F.) (Homoptera: Aphididae), on the yield of wheat plants subjected to water deficits.

EVETEX. Fereres, A. Gutierrez, C.; Del Estal, P.; Castanera, P. College Park, Md. : Entomological Society of America. Abstract: The effects of two population levels of *Sitobion avenae* (F.) and two water stress levels on the yield of winter wheat were examined. Wheat, cv. Talento grown in 7.6-liter pots under greenhouse conditions was subjected to three water regimes for establishing three plant water potential levels. Aphids were caged on wheat heads, and mean survival, mean fecundity (first 10 d), mean total progeny per adult, and the intrinsic rate of increase (r_m) were calculated for each of the treatments. Water deficits appeared to reduce reproductive rates, although differences were not significant at $P = 0.05$. Water stress was the single most significant factor reducing plant growth and yield. Leaf stomatal conductance decreased in the water-stressed plants. This was associated with stomatal control of transpiration, and consequent yield reductions were observed. A density of six adult aphids for 32 d on the head significantly reduced most of the yield components when plants were grown under nonstress conditions (leaf water potential psi between -0.09 and -1.29 MPa mega-pascals), but there was no significant decrease in yield at a density of two adult aphids per head. No significant differences between treatments were observed for the moderate stress regime (psi, -1.42 to -2.28 MPa). However, under severe stress conditions (psi, -1.84 to -2.60 MPa), plants infested with six adult aphids per head suffered a substantial yield reduction (up to a 39.3% loss in kernel weight per head) when compared with the noninfested plants. A significantly higher percentage of yield reduction for a given aphid.

density was obtained when plants were grown under severe water stress versus nonstress conditions. This result suggests the existence of a synergistic effect on wheat yield between aphids and water stress. Therefore, the water status of the plant should be considered to determine an economic injury level for *S. avenae* infesting winter wheat. *Environmental entomology*. June 1988. v. 17 (3). p. 596-602. Includes references. (NAL Call No.: DNAL QL461.E532).

0619

Importance of environmental pH during root development on phosphate absorption.

PLPFA. Webb, M.J. Loneragan, J.F. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Sept 1985. v. 79 (1). p. 142-148. Includes 19 references. (NAL Call No.: DNAL 450 P692).

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Improved separation and toxicity analysis methods for purothionins.

CECHAF. Jones, B.L. Lookhart, G.L.; Johnson, D.E. St. Paul, Minn. : American Association of Cereal Chemists. *Cereal chemistry*. Paper presented at the "Symposium on Protein Improvement in Cereals and Oilseeds Through Traditional and Modern Genetic Approaches," Sept. 1984, Minneapolis, Minnesota. Sept/Oct 1985. v. 62 (5). p. 327-331. Includes references. (NAL Call No.: DNAL 59.8 C33).

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In situ measurement of plant water potentials by equilibration with microdroplets of polyethylene glycol 8000.

PLPFA. Fisher, D.B. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Sept 1985. v. 79 (1). p. 270-273. Includes 13 references. (NAL Call No.: DNAL 450 P692).

0622

In situ nitrate assimilation in winter wheat: peduncle injection with nitrogen-15-nitrate at anthesis.

AGJOAT. MacKown, C.T. Van Sanford, D.A. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Mar/Apr 1986. v. 78 (2). p. 311-317. Includes 31 references. (NAL Call No.: DNAL 4 AM34P).

0623

Induction of aluminum tolerance in wheat seedlings by low doses of aluminum in the nutrient solution.

PLPFA. Aniol, A. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Nov 1984. v. 76 (3). p. 551-555. Includes 24 references. (NAL Call No.: DNAL 450 P692).

0624

The influence of chaff extracts on the germination of spring triticale.

AGJOAT. Salmon, D.F. Helm, J.H.; Duggan, T.R.; Lakeman, D.M. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Sept/Oct 1986. v. 78 (5). p. 863-867. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Influence of crop growth on ionic equilibria, selectivity and diffusion of cations in soil.

CSOSA2. Baligar, V.C. New York, N.Y. : Marcel Dekker. *Communications in soil science and plant analysis*. Feb 1985. v. 16 (2). p. 163-178. Includes 32 references. (NAL Call No.: DNAL S590.C63).

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The influence of fertilizers on the Vitamin-B content of wheat / C.H. Hunt.

Hunt, Charles Henry, 1884-. Wooster, Ohio : Ohio Agricultural Experiment Station, 1927. Cover title. 41 p. : ill. ; 23 cm. Bibliography: p. 40-41. (NAL Call No.: DNAL 100 OH3S (2) no.415).

0627

Influence of manganese deficiency and toxicity on isoprenoid syntheses.

PLPFA. Wilkinson, R.E. Ohki, K. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Aug 1988. v. 87 (4). p. 841-846. Includes references. (NAL Call No.: DNAL 450 P692).

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Influence of maturation temperature and stage of kernel development on sprouting tolerance of wheat and triticale.

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AGJOAT. Fixen, P.E. Buchenau, G.W.; Gelderman, R.H.; Schumacher, T.E.; Gerwing, J.R.; Cholick, F.A.; Farber, B.G. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1986. v. 78 (4). p. 736-740. Includes references. (NAL Call No.: DNAL 4 AM34P).

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AGJOAT. Chevalier, P.M. Ciha, A.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1986. v. 78 (2). p. 296-300. Includes 19 references. (NAL Call No.: DNAL 4 AM34P).

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PLPHA. Kobza, J. Edwards, G.E. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1987. v. 83 (1). p. 69-74. Includes references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Heath-Pagliuso, S. Huffaker, R.C.; Allard, R.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1984. v. 76 (2). p. 353-358. ill. Includes 23 references. (NAL Call No.: DNAL 450 P692).

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NEPHA. Deignan, M.T. Lewis, O.A.M. New York, N.Y. : Cambridge University Press. The New phytologist. Sept 1988. v. 110 (1). p. 1-3. Includes references. (NAL Call No.: DNAL 450 N42).

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PLPHA. Patterson, B.D. Payne, L.A.; Chen, Y.Z.; Graham, D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1984. v. 76 (4). p. 1014-1018. ill. Includes 27 references. (NAL Call No.: DNAL 450 P692).

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CSOSA2. Lu, N. Edwards, J.H. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Oct 1986. v. 17 (10). p. 1055-1069. Includes references. (NAL Call No.: DNAL S590.C63).

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PLPHA. Morgan, J.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1984. v. 76 (1). p. 112-117. ill. Includes 22 references. (NAL Call No.: DNAL 450 P692).

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 JPNUDS. Woodend, J.J. Glass, A.D.M.; Person, C.D. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Sept 1986. v. 9 (9). p. 1213-1225. Includes 24 references. (NAL Call No.: DNAL QK867.J67).

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 AGJOAT. Dunphy, D.J. Holt, E.C.; McDaniel, M.E. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1984. v. 76 (6). p. 871-874. Includes 24 references. (NAL Call No.: DNAL 4 AM34P).

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 AGJOAT. Eastham, J. Oosterhuis, D.M.; Walker, S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1984. v. 76 (5). p. 841-847. Includes references. (NAL Call No.: DNAL 4 AM34P).

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 AGJOAT. Allmaras, R.R. Kraft, J.M.; Pukul, J.L. Jr. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1987. v. 79 (3). p. 439-445. Includes references. (NAL Call No.: DNAL 4 AM34P).

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 CECHAF. Morris, C.F. Paulsen, G.M. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Sept/Oct 1988. v. 65 (5). p. 404-408. Includes references. (NAL Call No.: DNAL 59.8 C33).

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 PLPHA. Singh, S.P. Paleg, L.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1984. v. 76 (1). p. 139-142. ill. Includes 18 references. (NAL Call No.: DNAL 450 P692).

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PLPFA. Singh, S.P. Paleg, L.G. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Sept 1984. v. 76 (1). p. 143-147. Includes 33 references. (NAL Call No.: DNAL 450 P692).

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LY195259, new chemical hybridizing agent for wheat.

CRPSAY. Tschabold, E.E. Heim, D.R.; Beck, J.R.; Wright, F.L.; Rainey, D.P.; Terando, N.H.; Schwer, J.F. Madison, Wis. : Crop Science Society of America. LY195259, 5-(Aminocarbonyl)-1-(3-methylphenyl)-1H-pyrazole-4-carboxylic acid, has been physically characterized in the laboratory and has been evaluated as a male sterilizing agent under greenhouse and field conditions on several plant species, including wheat (*Triticum aestivum* L.). Male sterilizing agents are useful in producing hybrid seed. Under optimum conditions, the compound when applied as a foliar spray to wheat at rates as low as 1.12 kg a.i. ha⁻¹ has produced greater than 95% male sterility. It also has been effective when applied in the spring as soil-surface treatments. Over 100 cultivars have been tested and had at least 90% male sterility when treated with LY195259. Some crosses made with wheat cultivars treated with LY195259 and a properly nicked pollen source with good pollen load had 80% of the seed set of the selfed male parent. No physical distortion of the hybrid seed was apparent, and no other phytotoxic effects were visually evident from rates as high as 3 times the mean effective dose. *Crop science*. July/Aug 1988. v. 28 (4). p. 583-588. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Mechanisms of aluminum tolerance in *Triticum aestivum* L. (wheat). I. Differential pH induced by winter cultivars in nutrient solutions.
AJBOA. Taylor, G.J. Foy, C.D. Baltimore, Md. : Botanical Society of America. *American journal of botany*. May 1985. v. 72 (5). p. 695-701. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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AJBOA. Taylor, G.J. Foy, C.D. Baltimore, Md. : Botanical Society of America. *American journal of botany*. May 1985. v. 72 (5). p. 702-706. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Metabolism of 2-deoxy-D-glucose by axenically grown mycelia of *Puccinia graminis*.

EXMYD. Manners, J.M. Maclean, D.J.; Scott, K.J. Duluth, Minn. : Academic Press. *Experimental mycology*. Dec 1988. v. 12 (4). p. 350-356. Includes references. (NAL Call No.: DNAL QK600.E9).

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PLPFA. Legris-Delaporte, S. Ferron, F.; Landry, J.; Costes, C. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Dec 1987. v. 85 (4). p. 1026-1030. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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AGUOAT. Miyasaka, S.C. Checkai, R.T.; Grunes, D.L.; Norvell, W.A. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Mar/Apr 1988. v. 80 (2). p. 213-220. ill. Includes references. (NAL Call No.: DNAL 4 AM34P).

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AGUOAT. McCaig, T.N. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. May/June 1986. v. 78 (3). p. 551-557. ill. Includes 3 references. (NAL Call No.: DNAL 4 AM34P).

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NDFRA. Larsen, J.K. Brun, L.J.; Enz, J.W.; Cox, D.J. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. Mar/Apr 1987. v. 44 (5). p. 9-13. maps. Includes references. (NAL Call No.: DNAL 100 N813B).

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Louisiana. 1987. (50). p. 123-130. Includes references. (NAL Call No.: DNAL 64.9 AM3).

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JPNUDS. Morard, P. New York, N.Y. : Marcel Dekker. *Journal of plant nutrition*. 1986. v. 9 (1). p. 43-55. Includes references. (NAL Call No.: DNAL QK867.J67).

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PLPPA. Pier, P.A. Berkowitz, G.A. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Nov 1987. v. 85 (3). p. 655-661. Includes references. (NAL Call No.: DNAL 450 P692).

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SCIEA. Lewis, N.G. Yamamoto, E.; Wooten, J.B.; Just, G.; Ohashi, H.; Towers, G.H.N. Washington, D.C. : American Association for the Advancement of Science. *Science*. Sept 11, 1987. v. 237 (4820). p. 1344-1346. Includes references. (NAL Call No.: DNAL 470 SCI2).

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CRPSAY. Massacci, A. Giardi, M.T.; Tricoli, D.; Di Marco, G. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1986. v. 26 (3). p. 557-563. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Nitrogen metabolism in senescent flag leaves of wheat (*Triticum aestivum L.*) in the light.

PLPHA. Berger, M.G. Woo, K.C.; Wong, S.C.; Fock, H.P. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Aug 1985. v. 78 (4). p. 779-783. Includes 27 references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Lin, W. Kauer, J.C. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Feb 1985. v. 77 (2). p. 403-406. ill. Includes 17 references. (NAL Call No.: DNAL 450 P692).

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Percent green as an indicator of biomass and phase development.

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PLPHA. Holden, D.W. Rohringer, R. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Nov 1985. v. 79 (3). p. 820-824. ill. Includes 18 references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Gupta, A.S. Berkowitz, G.A. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Dec 1987. v. 85 (4). p.

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AGJOAT. Langan, T.D. Pendleton, J.W.; Oplinger, E.S. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Sept/Oct 1986. v. 78 (5). p. 769-772. Includes references. (NAL Call No.: DNAL 4 AM34P).

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WEESA6. Donald, W.W. Zimdahl, R.L. Champaign, Ill. : Weed Science Society of America. *Weed science*. Mar 1987. v. 35 (2). p. 149-154. maps. Includes references. (NAL Call No.: DNAL 79.8 W41).

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PLPFA. Goldstein, A.H. Hunziker, A.D. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Apr 1985. v. 77 (4). p. 1013-1015. Includes 18 references. (NAL Call No.: DNAL 450 P692).

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CECHAF. Batten, G.D. St. Paul, Minn. : American Association of Cereal Chemists. *Cereal chemistry*. Sept/Oct 1986. v. 63 (5). p. 384-387. Includes references. (NAL Call No.: DNAL 59.8 C33).

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PLPFA. Gustafson, S.W. Raynes, D.A.; Jensen, R.G. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Jan 1987. v. 83 (1). p. 170-176. Includes references. (NAL Call No.: DNAL 450 P692).

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NASSD. Goudriaan, J. Laar, H.H. van; Keulen, H. van; Louwerse, W. New York, N.Y. : Plenum Press. *NATO advanced study institutes series. Series A. Life sciences*. Paper presented at the "Workshop on Wheat Growth and Modelling," April 9-12, 1984, Bristol, United Kingdom. 1985. v.

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Photosynthetic difference among *Triticum* accessions at tillering.

CRPSAY. Johnson, R.C. Kebbede, H.; Mornhinweg, D.W.; Carver, B.F.; Rayburn, A.L.; Nguyen, H.T. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1987. v. 27 (5). p. 1046-1050. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PLPFA. Araus, J.L. Tapia, L. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Nov 1987. v. 85 (3). p. 667-673. Includes references. (NAL Call No.: DNAL 450 P692).

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PLPFA. Pomeroy, M.K. Andrews, C.J.; Stanley, K.P.; Gao, J.Y. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. May 1985. v. 78 (1). p. 207-210. Includes 27 references. (NAL Call No.: DNAL 450 P692).

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0693

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CSOSA2. Goh, T.B. Huang, P.M.; Rennie, D.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May 1986. v. 17 (5). p. 515-531. Includes 37 references. (NAL Call No.: DNAL S590.C63).

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PLPHA. Burke, J.J. Hatfield, J.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1987. v. 85 (1). p. 100-103. Includes references. (NAL Call No.: DNAL 450 P692).

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PLPHA. MacKown, C.T. Van Sanford, D.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 17-20. Includes 20 references. (NAL Call No.: DNAL 450 P692).

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Horton, J. R. 1882-. Jones, E. T. 1892-; Wadley, F. M. 1892-. Washington, D.C. : U.S. Dept. of Agriculture, 1943. Caption title. 10 p. ; 23 cm. (NAL Call No.: DNAL 1 Ag84C no.687).

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KAEBA. Garman, H. Lexington : The Station. Bulletin - Kentucky, Agricultural Experiment Station. Documents available from: Agriculture Library, Agricultural Science Center - North, University of Kentucky, Lexington, Ky. 40546-0091. Dec 1902. (103). p. 229-244. (NAL Call No.: DNAL 100 K41 (2)).

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Pike, K.S. Antonelli, A.L. Pullman : The Center. Research bulletin XB - Washington State University, Agricultural Research Center. 1981. (0909). 12 p. ill., maps. Includes references. (NAL Call No.: DNAL S541.5.W2R47).

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Identification and partial characterization of digestive carbohydrases in larvae of the Hessian fly, *Mayetiola destructor* (Say) (Diptera: Cecidomyiidae).

Grover, P.B. Jr. Ross, D.R.; Shukle, R.H. New York, N.Y. : Alan R. Liss, Inc. Archives of insect biochemistry and physiology. 1988. v. 8 (1). p. 59-72. ill. Includes references. (NAL Call No.: DNAL QL495.A7).

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Impact of the English grain aphid, *Sitobion avenae* (F.) (Homoptera: Aphididae), on the yield of wheat plants subjected to water deficits.
EVETEX. Fereres, A. Gutierrez, C.; Del Estal, P.; Castanera, P. College Park, Md. : Entomological Society of America. Abstract: The effects of two population levels of *Sitobion avenae* (F.) and two water stress levels on the yield of winter wheat were examined. Wheat, cv. Talento grown in 7.6-liter pots under greenhouse conditions was subjected to three water regimes for establishing three plant water potential levels. Aphids were caged on wheat heads, and mean survival, mean fecundity (first 10 d), mean total progeny per adult, and the intrinsic rate of increase (rm) were calculated for each of the treatments. Water deficits appeared to reduce reproductive rates, although differences were not significant at $P = 0.05$. Water stress was the single most significant factor reducing plant growth and yield. Leaf stomatal conductance decreased in the water-stressed plants. This was associated with stomatal control of transpiration, and consequent yield reductions were observed. A density of six adult aphids for 32 d on the head significantly reduced most of the yield components when plants were grown under nonstress conditions (leaf water potential psi between -0.09 and -1.29 MPa mega-pascals), but there was no significant decrease in yield at a density of two adult aphids per head. No significant differences

between treatments were observed for the moderate stress regime (psi, -1.42 to -2.28 MPa). However, under severe stress conditions (psi, -1.84 to -2.60 MPa), plants infested with six adult aphids per head suffered a substantial yield reduction (up to a 39.3% loss in kernal weight per head) when compared with the noninfested plants. A significantly higher percentage of yield reduction for a given aphid density was obtained when plants were grown under severe water stress versus nonstress conditions. This result suggests the existence of a synergistic effect on wheat yield between aphids and water stress. Therefore, the water status of the plant should be considered to determine an economic injury level for *S. avenae* infesting winter wheat. Environmental entomology. June 1988. v. 17 (3). p. 596-602. Includes references. (NAL Call No.: DNAL QL461.E532).

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Infestation: changes in rules, procedures debated.

CACBA. Johnson, L.A. Minneapolis, Minn. : Cargill, Inc. Cargill bulletin. May 1986. p. 4-5. (NAL Call No.: DNAL 281.8 C19).

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CACBA. Johnson, L.A. Minneapolis, Minn. : Cargill, Inc. Cargill bulletin. Apr 1986. p. 4-5. (NAL Call No.: DNAL 281.8 C19).

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Weiss, M.J. Morrill, W.L.; Reitz, L.L. Bozeman : The Station. Montana agresearch - Montana Agricultural Experiment Station, Montana University. Winter 1987. v. 4 (1). p. 2-5. Includes references. (NAL Call No.: DNAL S451.M9M9).

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Influence of simulated grasshopper damage on yield and quality components of spring-planted wheat, barley, and oats.

JKESA. Weiss, M.J. Lawrence, Kan. : The Society. Journal of the Kansas Entomological Society. Jan 1987. v. 60 (1). p. 77-82. Includes references. (NAL Call No.: DNAL 420 K13).

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Insect and mite pests of wheat.

AGRYA. Hatchett, J.H. Starks, K.J.; Webster, J.A. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (13). p. 625-675. Includes references. (NAL Call No.: DNAL 4 AM392).

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Insect-plant interactions: greenbugs (Homoptera: Aphididae) disrupt acclimation of winter wheat to drought stress.

EVETEX. Dorschner, K.W. Johnson, R.C.; Eikenbary, R.D.; Ryan, J.D. College Park, Md. : Entomological Society of America. Environmental entomology. Feb 1986. v. 15 (1). p. 118-121. Includes references. (NAL Call No.: DNAL QL461.E532).

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Johnson, D.W. Lexington : The Service. ENT - University of Kentucky, College of Agriculture, Cooperative Extension Service. Dec 1986. (47). 1 p. (NAL Call No.: DNAL 275.29 K415E).

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Machines for coating seed wheat with copper carbonate dust /by A.H. Hoffman and H.L. Belton.

Hoffman, A. H. 1873-. Belton, H. L. 1886-. Berkeley, Cal. : Agricultural Experiment Station, 1925. Cover title. 16 p. : ill., plans ; 24 cm. Bibliography: p. 16. (NAL Call No.: DNAL 100 C12S no.391).

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A method of estimating reduction in yield of wheat caused by hessian fly infestation /by C.C. Hill, E.J. Udine, and J.S. Pinckney.

Hill, C. C. 1890-. Udine, E. J. 1902-; Pinckney, J. S. 1901-1940. Washington, D.C. : U.S. Dept. of Agriculture, 1943. Caption title.~ "Contribution from Bureau of Entomology and Plant Quarantine.". 10 p. ; 23 cm. (NAL Call No.: DNAL 1 Ag84C no.663).

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Kantack, B. Brookings, S.D. : The Department. Field facts : soils, insects, diseases, weeds, crops - South Dakota State University, Cooperative Extension, Plant Science Department. May 4, 1988. v. 3 (5). p. 1. (NAL Call No.: DNAL S596.7.F44).

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Modification of host nitrogen levels by the greenbug (Homoptera: Aphididae): its role in resistance of winter wheat to aphids.
EVETEX. Dorschner, K.W. Ryan, J.D.; Johnson, R.C.; Eikenbary, R.D. College Park, Md. : Entomological Society of America. *Environmental entomology*. Aug 1987. v. 16 (4). p. 1007-1011. Includes references. (NAL Call No.: DNAL QL461.E532).

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Johnson, K.J.R. Drapek, R.; Fisher, G.C. Corvallis, Or. : The Service. Extension circular - Oregon State University, Extension Service. Aug 1987. (1262). 4 p. ill., maps. (NAL Call No.: DNAL 275.29 OR32C).

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Brookings, S.D. : The Department. Field facts : soils, insects, diseases, weeds, crops - South Dakota State University, Cooperative Extension, Plant Science Department. June 18, 1987. v. 2 (11). p. 2-3. (NAL Call No.: DNAL S596.7.F44).

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Kantack, B. Brookings, S.D. : The Department. Field facts : soils, insects, diseases, weeds, crops - South Dakota State University, Cooperative Extension Service, Plant Science Department. July 21, 1988. p. 3. (NAL Call No.: DNAL S596.7.F44).

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Observations on rearing and diapause termination of *Sitodiplosis mosellana* (Diptera: Cecidomyiidae) in the laboratory.
JEENAI. Hinks, C.F. Doane, J.F. Lanham, Md. : Entomological Society of America. *Journal of economic entomology*. Dec 1988. v. 81 (6). p. 1816-1818. Includes references. (NAL Call No.: DNAL 421.J822).

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JKESA. Jackson, J.J. Sutter, G.R. Lawrence, Kan. : The Society. *Journal of the Kansas Entomological Society*. Apr 1985. v. 58 (2). p. 353-355. ill. Includes references. (NAL Call No.: DNAL 420.K13).

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JPFCD2. Westcott, N.D. Lee, Y.W.; McKinlay, K.S. New York, N.Y. : Marcel Dekker. *Journal of environmental science and health. Part B. Pesticides, food contaminants, and agricultural wastes*. 1987. v. B22 (4). p. 379-390. Includes references. (NAL Call No.: DNAL TD172.J61).

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Whittle, K. Henry, T.J. Hyattsville, Md. : The Service. APHIS 81 - U.S. Department of Agriculture, Animal and Plant Health Inspection Service. Sept 1985. (46). p. 89-94. ill., maps. Includes references. (NAL Call No.: DNAL aSB599.A3U5).

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Possible involvement of cell wall polysaccharides with resistance to a phytotoxic aphid in wheat.
Ryan, J.D. Mort, A.J.; Johnson, R.C.; Richardson, P. Columbia, Mo. : The Interdisciplinary Plant Biochemistry and Physiology Program. *Current topics in plant biochemistry and physiology : Proceedings of the ... Plant Biochemistry and Physiology Symposium held at the University of Missouri, Columbia*. 1987. v. 6. p. 164. (NAL Call No.: DNAL QK861.P55).

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Preplant tillage effects on population dynamics of soybean insect predators.
CRPSAY. Funderburk, J.E. Wright, D.L.; Teare, I.D. Madison, Wis. : Crop Science Society of America. *Tillage operations modify soil habitats where many pests and their natural enemies reside at least during part of their life cycle*. Bigeyed bugs (*Geocoris spp.*) and damsel bugs (*Nabis* and *Reduviolus spp.*) are common beneficial polyphagous insect predators in many crops. The objective of this research was to measure effects of tillage on population cycles and population size of those predators to aid in development of cultural IPM (integrated pest management) strategies for biological control of insect pests in soybean *Glycine max* (L.) Merr. double cropped with wheat (*Triticum aestivum* L.). The four tillage regimes used were no tillage and disk tillage with and without in-row subsoiling. Bigeyed bug nymphal and adult population cycles were similar for each tillage/subsoiling treatment. There were differences between years because in 1986 there was considerable overlap of generations, which was not observed in 1985. Disk tillage treatments had higher bigeyed bug nymphal and adult populations than the no tillage treatments in 1985 and 1986, but subsoiling did not influence population size.

Damsel bug population cycles were also similar for all tillage/subsoiling treatments in both years. In 1985, populations of adult and nymphal damsel bugs were lower for no tillage without subsoiling than for disk tillage without subsoiling, disk tillage with subsoiling, or no tillage with subsoiling. Population sizes were similar for all treatments in 1986. *Crop science*. Nov/Dec 1988. v. 28 (6). p. 973-977. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Reduction of greenbug (Homoptera:Aphididae) populations by surface residues in wheat tillage studies.

JEENAI. Burton, R.L. Krenzer, E.G. Jr. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. Apr 1985. v. 78 (2). p. 390-394. ill. Includes references. (NAL Call No.: DNAL 421 J822).

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Registration of KS85WGRC01 hessian fly-resistant hard red winter wheat germplasm. CRPSAY. Gill, B.S. Hatchett, J.H.; Cox, T.S.; Raup, W.J.; Sears, R.G.; Martin, T.J. Madison, Wis. : Crop Science Society of America. *Crop science*. Nov/Dec 1986. v. 26 (6). p. 1266-1267. Includes 2 references. (NAL Call No.: DNAL 64.8 C883).

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CRPSAY. Cholick, F.A. Hatchett, J.H.; Steiger, D.K.; Buchenau, G.W.; Sellers, K.M. Madison, Wis. : Crop Science Society of America. *Crop science*. July/Aug 1988. v. 28 (4). p. 720-721. Includes references. (NAL Call No.: DNAL 64.8 C883).

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CRPSAY. Sunderman, D.W. Hatchett, J.H. Madison, Wis. : Crop Science Society of America. *Crop science*. Sept/Oct 1986. v. 26 (5). p. 1071-1072. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Relative cold tolerance of Russian wheat aphid and biotype-E greenbug (Homoptera: Aphididae). JKESA. Harvey, T.L. Martin, T.J. Lawrence, Kan. : The Society. *Journal of the Kansas Entomological Society*. Jan 1988. v. 61 (1). p. 137-140. Includes references. (NAL Call No.: DNAL 420 K13).

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Reproduction of *Schizaphis graminum* (Homoptera: Aphididae) on resistant and susceptible wheat genotypes during simulated drought stress induced with polyethylene glycol.

EVETEX. Sumner, L.C. Dorschner, K.W.; Ryan, J.D.; Eikenbary, R.D.; Johnson, R.C.; McNew, R.W. College Park, Md. : Entomological Society of America. *Environmental entomology*. June 1986. v. 15 (3). p. 756-762. Includes references. (NAL Call No.: DNAL QL461.E532).

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SENTD. Behle, R.W. Michels, G.J. Jr. College Station, Tex. : Southwestern Entomological Society. *The Southwestern entomologist*. Mar 1988. v. 13 (1). p. 55-62. Includes references. (NAL Call No.: DNAL QL461.S65).

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CRSOA. Madison, Wis. : American Society of Agronomy. *Crops and soils magazine*. Mar 1987. v. 39 (6). p. 7-9. ill. (NAL Call No.: DNAL 6 W55).

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Tempe, Ariz. : Arizona Farmer-Stockman. Arizona farmer-stockman. June 1987. v. 66 (6). p. 16-17. ill. (NAL Call No.: DNAL 6 AR44).

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The Russian wheat aphid: a threat to Montana grain production.

Johnson, G.D. Bozeman, Mont. : The Service. Montguide MT : Agriculture - Montana State University, Cooperative Extension Service. In subseries: Agriculture. Feb 1988. (8801). 3 p. ill. (NAL Call No.: DNAL S544.3.M9M65).

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WUEXA. Pike, K.S. Suomi, D. Pullman, Wash. : The Service. Extension bulletin - Washington State University, Cooperative Extension Service. In subseries: Insect Answers. Jan 1988. (1486). 2 p. ill., maps. (NAL Call No.: DNAL 275.29 W27P).

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Shannon, M. Tempe, Ariz. : Arizona Farmer-Stockman. Arizona farmer-stockman. Apr 1988. v. 67 (4). p. 30-31. ill. (NAL Call No.: DNAL 6 AR44).

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(Homoptera:Aphididae) to a resistant and a susceptible variety of wheat.

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Burkhardt, C.C. Laramie, Wyo. : The Station. Research journal - University of Wyoming, Agricultural Experiment Station. July 1974. (84). 5 p. (NAL Call No.: DNAL S131.E22).

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JEENAI. McGaughey, W.H. Johnson, D.E. College Park, Md. : Entomological Society of America. Journal of economic entomology. Dec 1987. v. 80 (6). p. 1122-1126. Includes references. (NAL Call No.: DNAL 421 J822).

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EVETEX. Niassy, A. Ryan, J.D.; Peters, D.C. College Park, Md. : Entomological Society of America. Environmental entomology. Oct 1987. v. 16 (5). p. 1163-1168. Includes references. (NAL Call No.: DNAL QL461.E532).

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EVETEX. Wellso, S.G. Olien, C.R.; Hoxie, R.P.; Kuhna, A.S. College Park, Md. : Entomological Society of America. Environmental entomology. Apr 1986. v. 15 (2). p. 392-395. Includes references. (NAL Call No.: DNAL QL461.E532).

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Phillips, W. J. 1879-. Washington, D.C. : U.S. Dept. of Agriculture, 1918. Cover title. "Contribution from the Bureau of Entomology.". 16 p. : ill., 1 map ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1006).

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Survival and reproduction of *Rhopalosiphum maidis* (Fitch) (Homoptera: Aphididae) on winter wheat during simulated drought stress.

JKESA. Sumner, L.C. Eikenbary, R.D.; Johnson, R.C. Lawrence, Kan. : The Society. Journal of the Kansas Entomological Society. July 1986. v. 59 (3). p. 561-563. Includes references. (NAL

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The wheat jointworm and its control /W.J. Phillips and F.W. Poos.

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PLDRA. Schmitt, D.P. Nelson, L.A. St. Paul, Minn. : American Phytopathological Society. Plant disease. Apr 1987. v. 71 (4). p. 323-326. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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FNETD. Brown, R.H. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 82-83. (NAL Call No.: DNAL 464.9 AM31R).

0910

The eelworm disease of wheat and its control /Luther P. Byars.
Byars, Luther Parris, 1887-. Washington, D.C. : U.S. Dept. of Agriculture, 1919. Cover title. - "Contribution from the Bureau of Plant Industry.". 10 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1041).

0911

Effect of soil temperature on reproduction of *Meloidogyne chitwoodi* and *M. hapla* alone and in combination on potato and *M. chitwoodi* on rotation plants.
JONEB. O'Bannon, J.H. Santo, G.S. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1984. v. 16 (3). p. 309-312. Includes 10 references. (NAL Call No.: DNAL QL391.N4J62).

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JONEB. Koenning, S.R. Schmitt, D.P.; Barker, K.R. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Oct 1985. v. 17 (4). p. 464-469. Includes 20 references. (NAL Call No.: DNAL QL391.N4J62).

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JONEB. Minton, N.A. Parker, M.B. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Jan 1987. v. 19 (1). p. 38-43. Includes references. (NAL Call No.: DNAL QL391.N4J62).

0916

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JONEB. Spiegel, Y. Robertson, W.M. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1988. v. 20 (3). p. 499-501. ill. Includes references. (NAL Call No.: DNAL QL391.N4J62).

PLANT DISEASES - GENERAL

0917

Final report to the North Central Regional Pesticide Impact Assessment Program on losses associated with insect infestation of farm stored shelled corn and wheat in Minnesota /by Alan V. Barak and Phillip K. Harein.

Barak, Alan V. Harein, Phillip K. St. Paul, Minn. : Agricultural Experiment Station, University of Minnesota, 1981. Cover title: Losses associated with insect infestation of farm stored shelled corn and wheat in Minnesota. ii, 94 p. : ill., map ; 28 cm. Bibliography: p. 93-94. (NAL Call No.: DNAL S1.M52 no.12).

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The hot water treatment for the prevention of smut on oats, wheat and barley / E.S. Goff . Goff, E. S. 1852-1902. Madison, Wis. : University of Wisconsin, Agricultural Experiment Station, 1896. Cover title. 13 p. : ill. ; 23 cm. (NAL Call No.: DNAL 100 W75 (1) no.50).

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Inquiry concerning amount of loss from smut of wheat in Illinois. Urbana, Ill. : University of Illinois Agricultural Experiment Station, 1902. Caption title. 2 p. ; 23 cm. (NAL Call No.: DNAL 275.29 IL62C no.54).

0920

Preparation of pellets containing fungi and nutrient for control of soilborne plant pathogens. Lewis, J.A. Papavizas, G.C.; Connick, W.J. Jr. Washington, D.C.? : The Department. Abstract: This invention relates to a method for preparing pellets containing living biocontrol fungi and nutrient dispersed throughout. Living fungi are selected and grown for inoculum. The fungal propagules and wheat bran are added to a sodium alginate solution. The fungal propagule-alginate-bran mixture is added dropwise into a solution of calcium chloride. The resultant alginate gel pellets containing living fungi can be dried and used to inoculate agricultural fields infested with soilborne diseases. United States Department of Agriculture patents. Copies of USDA patents are available for a fee from the Commissioner of Patents and Trademarks, U.S. Patents and Trademarks Office, Washington, D.C. 20231. May 26, 1987. (4,668,512). 1 p. Includes references. (NAL Call No.: DNAL aT223.V4A4).

0921

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Bebee, Charles N. Beltsville, Md. : U.S. Dept. of Agriculture, National Agricultural Library ; Washington, D.C. : U.S. Environmental Protection Agency, Office of Pesticides Programs, 1985. "September 1985."~ Includes index. 229 p. ; 28 cm. --. (NAL Call No.: DNAL aZ5076.A1U54 no.43).

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Johnson, Aaron G. 1880-. Washington, D.C. : U.S. Dept. of Agriculture, 1924. 10 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1414).

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Kanemasu, E.T. Houston, Tex. : Natl Aeronautics and Space Adm, Lyndon B. Johnson Space Center, 1975. Proceedings of the 1974 Lyndon B. Johnson Space Center Wheat-Yield Conference. p. 12/1-12/13. ill. (NAL Call No.: DNAL SB191.W5L9 1974).

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PLPRA. Holden, D.W. Rohringer, R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1985. v. 78 (4). p. 715-723. ill. Includes 4 references. (NAL Call No.: DNAL 450 P692).

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***Puccinia graminis* development in North America during 1986.**
PLDIDE. Roelfs, A.P. Long, D.L. St. Paul, Minn. : American Phytopathological Society. Plant disease. Dec 1987. v. 71 (12). p. 1089-1093. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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***Pythium* root rot a barrier to yield of Pacific Northwest wheat /by R. James Cook and W.A. Haglund. --.**
Cook, R. James, 1937-. Haglund, W. A. Wasginton, : Agricultural Research Center, Washington State University, 1982. 18 p. : ill. ; 28 cm. --. Bibliography: p. 18. (NAL Call No.: DNAL SB608.W5C6).

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Quantitative determination of the gene action of leaf rust resistance in four cultivars of wheat, *Triticum aestivum*.
PHYTAJ. Bjarko, M.E. Line, R.F. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Apr 1988. v. 78 (4). p. 451-456. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Races of *Puccinia graminis* in the United States and Mexico during 1986.

PLDIDE. Roelfs, A.P. Casper, D.H.; Long, D.L.; Roberts, J.J. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1987. v. 71 (10). p. 903-907. maps. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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Registration of 'Inia 86R' wheat.

CRPSAY. Qualset, C.O. Vogt, H.E.; Borlaug, N.E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1129. Includes 3 references. (NAL Call No.: DNAL 64.8 C883).

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Registration of 'Seward' wheat.

CRPSAY. Cox, D.J. D'Appolonia, B.L.; Miller, J.D. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 378-379. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Relationship between resistance to Hessian fly and powdery mildew in soft white spring wheat PI 468960.

CRPSAY. Sunderman, D.W. Hatchett, J.H. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1071-1072. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Removing smut balls from seed wheat /by W.M. Hurst ... et al. .

Hurst, W. M. 1898-. Washington, D.C. : U.S. Dept. of Agriculture, 1935. Caption title. 16 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84C no.361).

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Reproduction of crown rot of wheat caused by *Fusarium graminearum* group 1 in the greenhouse.

PLDRA. Liddell, C.M. Burgess, L.W.; Taylor, P.W.J. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1986. v. 70 (7). p. 632-635. ill. Includes 12 references. (NAL Call No.: DNAL 1.9 P69P).

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The residual and interactive expressions of "defeated" wheat stem rust resistance genes.

PHYTAU. Brodny, U. Nelson, R.R.; Gregory, L.V. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1986. v. 76 (5). p. 546-549. Includes 13 references. (NAL Call No.: DNAL 464.8 P56).

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Resistant winter wheats compared at differing growth stages and leaf positions for tan spot severity.

PLDIDE. Cox, D.J. Hosford, R.M. Jr. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1987. v. 71 (10). p. 883-886. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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Rhizoctonia root rot of small grains favored by reduced tillage in the Pacific Northwest.

PLDRA. Weller, D.M. Cook, R.J.; MacNish, G.; Bassett, E.N.; Powelson, R.L.; Petersen, R.R. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1986. v. 70 (1). p. 70-73. ill. Includes 35 references. (NAL Call No.: DNAL 1.9 P69P).

1100

Role of a phenazine antibiotic from *Pseudomonas fluorescens* in biological control of *Gaeumannomyces graminis* var. *tritici*.

JOBAAY. Thomashow, L.S. Weller, D.M. Washington, D.C. : American Society for Microbiology. *Pseudomonas fluorescens* 2-79 (NRRL B-15132) and its rifampin-resistant derivative 2-79RN10 are suppressive to take-all, a major root disease of wheat caused by *Gaeumannomyces graminis* var. *tritici*. Strain 2-79 produces the antibiotic phenazine-1-carboxylate, which is active in vitro against *G. graminis* var. *tritici* and other fungal root pathogens. Mutants defective in phenazine synthesis (Phz-) were generated by Tn5 insertion and then compared with the parental strain to determine the importance of the antibiotic in take-all suppression on wheat roots. Six independent, prototrophic Phz- mutants were noninhibitory to *G. graminis* var. *tritici* in vitro and provided significantly less control of take-all than strain 2-79 on wheat seedlings. Antibiotic synthesis, fungal inhibition in vitro, and suppression of take-all on wheat were coordinately restored in two mutants complemented with cloned DNA from a 2-79 genomic library. These mutants contained Tn5 insertions in adjacent EcoRI fragments in the 2-79 genome, and the restriction maps of the region flanking the insertions and the complementary DNA were colinear. These results indicate that sequences required for phenazine production were present in the cloned DNA and support the importance of the phenazine

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p. 439-447. Includes references. (NAL Call No.: DNAL 75.8 P842).

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Rust problems facts, observations and theories, possible means of control / Henry L. Bolley .
Bolley, H. L. 1865-. Fargo : Agricultural Experiment Station, North Dakota Agricultural College, 1906. p. 607-672. 15 leaves of plates : ill. ; 21 cm. Includes bibliographical references. (NAL Call No.: DNAL 100 N813 no.68).

1107

Seed treatments for the control of certain diseases of wheat, oats, barley /by Benjamin Koehler.

Koehler, Benjamin, 1890-. Urbana, Ill. : University of Illinois Agricultural Experiment Station, 1935. Cover title. p. 497 -575 : ill. ; 23 cm. Bibliography: p. 571-575. (NAL Call No.: DNAL 100 I16S no.420).

1102

Rust susceptibility and fungicide response in three spring wheat cultivars, 1984.
FNETD. Mascianica, M.P. Caruso, F.L. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 137. (NAL Call No.: DNAL 464.9 AM31R).

1108

Single-bath hot-water and stem treatments of seed wheat for the control of loose smut /by V.F. Tapke.

Tapke, V. F. 1890-. Washington, D.C. : U.S. Dept. of Agriculture, 1926. Caption title. "March, 1926.". 29 p. : ill. ; 23 cm. Bibliography: p. 28. (NAL Call No.: DNAL 1 Ag84B no.1383).

1103

Scab of wheat and barley.
Mihuta-Grimm, L. Forster, R.L. Moscow, Idaho : The Service. Current information series - Cooperative Extension Service, University of Idaho. July 1986. (783). 2 p. ill. (NAL Call No.: DNAL 275.29 ID13IDC).

1109

Smuts of wheat and rye and their control /by W.H. Tisdale and V.F. Tapke.

Tisdale, W. H. 1892-. Tapke, V. F. 1890-. Washington, D.C. : U.S. Dept. of Agriculture, 1927. 17 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1540).

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Scab of wheat and barley and its control /by James G. Dickson.
Dickson, James G. 1891-. Washington, D.C. : U.S. Dept. of Agriculture, 1942. Originally issued Sept. 1929. 22 p. : ill., maps ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1599 1942).

1110

Snow mold damage in Idaho's winter wheat /Hugh C. McKay, J.M. Raeder.

McKay, Hugh C. Raeder, J. M. 1892-. Moscow, Idaho : University of Idaho, College of Agriculture, 1953. 1 sheet ; 44 x 23 cm. folded to 23 x 15 cm. (NAL Call No.: DNAL 100 ID14 no.200).

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Scab of wheat and barley and its control /by James G. Dickson and E.B. Mains.
Dickson, James G. 1891-. Mains, Edwin B. 1890-. Washington, D.C. : U.S. Dept. of Agriculture, 1929. "This bulletin supersedes Farmers' bulletin 1224.". 18 p. : ill., 1 map ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1599).

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Stinking smut (bunt) in wheat and how to prevent it /by R.J. Haskell, Robert W. Leukel, and E.G. Boerner.

Haskell, R. J. 1890-. Leukel, R. W. 1888-; Boerner, E. G. 1878-. Washington, D.C. : U.S. Dept. of Agriculture, 1931. Caption title. 20 p. : ill. ; 23 cm. Includes bibliographical references. (NAL Call No.: DNAL 1 Ag84C no.182).

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Seasonal variation and effects of wheat rotation on populations of *Verticillium dahliae* Kleb. in Ohio potato field soils.
APOJA. Joaquim, T.R. Smith, V.L.; Rowe, R.C. Orono, Me. : Potato Association of America. American potato journal. Aug 1988. v. 65 (8).

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Studies in the physiology and control of bunt, or stinking smut, of wheat /by Horace M. Woolman and Harry B. Humphrey.
 Woolman, Horace Mann, 1853-. Humphrey, Harry Baker, 1873-1955. Washington, D.C. : U.S. Dept. of Agriculture, 1924. Cover title. 30 p., 5 p. of plates : ill. ; 23 cm. Bibliography: p. 28-29. (NAL Call No.: DNAL 1 Ag84B no. 1239).

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Studies on bunt, or stinking smut, of wheat and its control /by R.W. Leukel.
 Leukel, R. W. Washington : U.S. Dept. of Agriculture, 1937. Cover title. 48 p. ; 23 cm. Literature cited: p. 45-47. (NAL Call No.: DNAL 1 Ag84Te no. 582).

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Suppression of root diseases of wheat by fluorescent pseudomonads and mechanisms of action.
 NASSD. Weller, D.M. Cook, R.J. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Iron, siderophores, and plant diseases / edited by T.R. Swinburne. Paper presented at the "NATO Advanced Research Workshop," July 1-5, 1985, Wye, Kent, England.~ Literature review. 1986. v. 117. p. 99-107. Includes references. (NAL Call No.: DNAL QH301.N32).

1115

Synthesis of differentiation-specific proteins in germlings of the wheat stem rust fungus after heat shock.
 EXMYD. Wanner, R. Forster, H.; Mendgen, K.; Staples, R.C. Orlando, Fla. : Academic Press. Experimental mycology. Sept 1985. v. 9 (3). p. 279-283. ill. Includes references. (NAL Call No.: DNAL QK600.E9).

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Synthetic derivatives of the fungal metabolite dehydrocurvularin: biological activity.
 PPGD. Cutler, H.G. Arrendale, R.F.; Cole, P.D.; Roberts, R.G.; Springer, J.P. Lake Alfred, Fla. : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1987. (14th). p. 236-247. Includes references. (NAL Call No.: DNAL SB128.P5).

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Take-all of irrigated spring wheat in North Dakota.

NDFRA. Stack, R.W. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. May/June 1983. v. 40 (6). p. 25-26. ill. Includes references. (NAL Call No.: DNAL 100 N813B).

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Take-all of wheat and its control /Harry B. Humphrey, Aaron G. Johnson, and Harold H. McKinney.

Humphrey, Harry Baker, 1873-. Johnson, Aaron G. 1880-; McKinney, Harold Hall, 1889-. Washington, D.C. : U.S. Dept. of Agriculture, 1921. Cover title.~ "Contribution from the Bureau of Plant Industry.". 12 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no. 1226).

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Tan spot effects on yield and yield components relative to growth stage in winter wheat.
 PLDIDE. Shabeer, A. Bockus, W.W. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1988. v. 72 (7). p. 599-602. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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Temperature effects on take-all of cereals caused by *Phialophora graminicola* and *Gaeumannomyces graminis*.

PHYTAJ. Smiley, R.W. Fowler, M.C.; Reynolds, K.L. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Sept 1986. v. 76 (9). p. 923-931. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Treatment of seed wheat with formalin.

Garman, H. Hathaway, C.L. Lexington, Ky. : The Station. Circular - University of Kentucky Agricultural Experiment Station. Documents available from: Agriculture Library, Agricultural Science Center - North, University of Kentucky, Lexington, Ky. 40546-0091. July 1918. (22). p. 21-28. (NAL Call No.: DNAL 100 K41).

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Treatment of smut in wheat ; Treatment of potato scab / H.L. Bolley .

Bolley, H. L. 1865-. Fargo : Government Agricultural Experiment Station for North Dakota, 1895. Cover title. p. 125-134 : ill. ; 22 cm. (NAL Call No.: DNAL 100 N813 no. 19).

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Use of Bayleton to assess spring wheat losses caused by rust, 1984.

FNETD. Line, R.F. Scott, R.B. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 135. (NAL Call No.: DNAL 464.9 AM31R).

1124

Use of Bayleton to obtain data on winter wheat losses caused by rust, 1984.

FNETD. Line, R.F. Scott, R.B. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 132. (NAL Call No.: DNAL 464.9 AM31R).

1125

Use of selective fungicides to obtain data on wheat yield losses caused by rust, 1985.

FNETD. Line, R.F. Scott, R.B. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 104. (NAL Call No.: DNAL 464.9 AM31R).

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Varietal resistance of spring wheats to bunt /by W.E. Brentzel and Ralph W. Smith.

Brentzel, W. E. 1889-. Smith, Ralph W. 1877-. Fargo : Agricultural Experiment Station, North Dakota Agricultural College, 1929. 12 p. : ill. ; 22 cm. Includes bibliographical references. (NAL Call No.: DNAL 100 N813 no.231).

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Wheat disease control with foliar fungicides, 1984.

FNETD. Buechley, G. Shaner, G. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1985. v. 40. p. 126-127. (NAL Call No.: DNAL 464.9 AM31R).

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Wheat disease control with seed and foliar fungicides, 1985.

FNETD. Buechley, G. Shaner, G. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 98-99. (NAL Call No.: DNAL 464.9 AM31R).

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Wheat disease control with Tilt foliar fungicide, 1985.

FNETD. Buechley, G. Shaner, G. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 99-100. (NAL Call No.: DNAL 464.9 AM31R).

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Wheat scab and its control /Aaron G. Johnson and James G. Dickson.

Johnson, Aaron G. 1880-. Dickson, James G. 1891-. Washington, D.C. : U.S. Dept. of Agriculture, 1921. Cover title.~ "Contribution from the Bureau of Plant Industry.". 16 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1224).

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Wheat smuts and their control /by J.A. Faris, V.F. Tapke, and H.A. Rodenhiser.

Faris, James Abraham, 1890-1933. Tapke, V. F. 1890-; Rodenhiser, H. A. 1899-. Washington, D.C. : U.S. Dept. of Agriculture, 1933. "This bulletin is a revision of and supersedes Farmers' bulletin 1540: Smuts of wheat and rye and their control.". ii, 16 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1711).

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Wheat smuts and their control /by R.W. Leukel ... et al. .

Leukel, R. W. 1888-. Washington, D.C. : U.S. Dept. of Agriculture, 1938. Originally issued Oct. 1933. ii, 18 p. : ill. ; 23 cm. (NAL Call No.: DNAL 1 Ag84F no.1711 1938).

PLANT DISEASES - BACTERIAL

1133

Bacterial and fungal blights of the foliage and heads of wheat.

AGRYA. Cunfer, B.M. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (13). p. 528-541. (NAL Call No.: DNAL 4 AM392).

1134

Black chaff of wheat and barley.

Forster, R.L. Mihuta-Grimm, L.; Schaad, N.W. Moscow, Idaho : The Service. Current information series - Cooperative Extension Service, University of Idaho. July 1986. (784). 2 p. ill. (NAL Call No.: DNAL 275.29 ID13IDC).

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Crop losses caused by *Xanthomonas* streak on spring wheat and barley.

PLDIDE. Shane, W.W. Baumer, J.S.; Teng, P.S. St. Paul, Minn. : American Phytopathological Society. Plant disease. Oct 1987. v. 71 (10). p. 927-930. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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Development of host range mutants of *Xanthomonas campestris* pv. *translucens*.

APMBA. Mellano, V.J. Cooksey, D.A. Washington, D.C. : American Society for Microbiology. Abstract: *Xanthomonas campestris* pv. *translucens* is the causal agent of bacterial leaf streak of cereal grains and grasses, and individual strains within the pathovar differ in their host range among the cereals. Coinoculation of a wide-host range and a narrow-host-range strain resulted in the wide-host-range reaction. Transposon and chemical mutagenesis of the wide-host-range strain Xct4, pathogenic on barley, wheat, rye, and triticale, resulted in variants with reduced host range. When pathogenicity was inactivated independently for barley, wheat, triticale, and rye, wild-type symptoms were retained on the other members in the host range. Testing of some host range mutants on additional varieties of the cereals indicated some cultivar specificity. In addition, mutants nonpathogenic on combinations of the hosts or on all hosts were isolated. This suggests that there are independent positive factors determining host range in this species, rather than an avirulence gene system such as those determining race specificity in other plant pathogens. Applied and Environmental microbiology. Apr 1988. v. 54 (4). p. 884-889. ill. Includes references. (NAL Call No.: DNAL 448.3 AP5).

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Diseases of durum wheat.

Miller, J.D. Fargo, North Dakota; Hosford, R.M. Jr.; Stack, R.W.; Statler, G.D. St. Paul, Minn., USA : American Association of Cereal Chemists, c1988. Durum wheat : chemistry and technology / edited by Giuseppe Fabriana, Claudia Lintas. Literature review. p. 69-92. Includes references. (NAL Call No.: DNAL SB191.W5D87).

1138

Fungicide treatment and leaf disease development on winter wheat, 1985.

FNETD. Watkins, J.E. Doubrnik, B.; Coziahr, L.V. s.l. : The Society. Fungicide and nematicide tests : results - American Phytopathological Society. 1986. v. 41. p. 94. (NAL Call No.: DNAL 464.9 AM31R).

1139

Method for screening bacteria and application thereof for field control of diseases caused by *Gaeumannomyces graminis*.

Weller, D.M. Cook, R.J.; Wilkinson, H.T. Washington, D.C. : The Office. United States patent - United States Patent Office. Copies of USDA patents are available for a fee from the Commissioner of Patents and Trademarks, U.S. Patents and Trademarks Office, Washington, D.C. 20231.~ Includes abstract. June 26, 1984. (4,456,684). 1 p. Includes 14 references. (NAL Call No.: DNAL NO CALL NO. (PAT)).

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The relationship of *Xanthomonas campestris* pv. *translucens* to frost and the effect of frost on black chaff development in wheat.

PHYTAJ. Azad, H. Schaad, N.W. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Jan 1988. v. 78 (1). p. 95-100. Includes references. (NAL Call No.: DNAL 464.8 P56).

PLANT DISEASES - VIRAL

1141

Barley yellow dwarf and wheat streak mosaic in small grains.

Geske, S. Riesselman, J. Bozeman, Mont. : The Service. Montguide MT : Human resource development - Montana State University, Cooperative Extension Service. Feb 1988. (8802). 4 p. (NAL Call No.: DNAL S544.3.M9M652).

1142

Effects of barley yellow dwarf virus on growth and yield of small grains in Montana.

PLDRA. Yount, D.J. Martin, J.M.; Carroll, T.W.; Zaske, S.K. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1985. v. 69 (6). p. 487-491. Includes 20 references. (NAL Call No.: DNAL 1.9 P69P).

1143

Effects of wheat streak mosaic virus infection on fifteen hard red spring wheat cultivars.

NDFRA. Edwards, M.C. McMullen, M.P. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. June/July 1987. v. 44 (6). p. 6-7. Includes references. (NAL Call No.: DNAL 100 N813B).

1144

Fall and early spring aphid (Homoptera: Aphididae) populations affecting wheat and barley production in Virginia.

JEENAI. McPherson, R.M. Starling, T.M.; Camper, H.M. Jr. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1986. v. 79 (3). p. 827-832. Includes references. (NAL Call No.: DNAL 421 J822).

1145

Identification of winter wheat cultivars and experimental lines resistant to wheat spindle streak mosaic virus.

PLDRA. Haufler, K.Z. Fulbright, D.W. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1986. v. 70 (1). p. 31-33. Includes 9 references. (NAL Call No.: DNAL 1.9 P69P).

1146

Planting considerations in winter wheat effected by wheat streak mosaic.

Hall, R. Brookings, S.D. : The Department. Field facts : soils, insects, diseases, weeds, crops - South Dakota State University, Cooperative Extension, Plant Science Department. May 11, 1988. v. 3 (6). p. 3. (NAL Call No.: DNAL S596.7.F44).

1147

Recurrence and control of wheat soil borne mosaic virus in Florida.

Kucharek, T.A. Griggs, M.; Cullen, R.E.; Christie, S. S.I. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1988. v. 47. p. 157-161. illl. Includes references. (NAL Call No.: DNAL 56.9 S032).

1148

Reduction in plant development, yield, and grain quality associated with wheat spindle streak mosaic virus.

PHYTAJ. Cunfer, B.M. Demski, J.W.; Bays, D.C. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Feb 1988. v. 78 (2). p. 198-204. Includes references. (NAL Call No.: DNAL 464.8 P56).

1149

Sticky-tape method to measure cultivar effect on wheat curl mite (Acari: Eriophyidae) populations in wheat spikes.

JEENAI. Harvey, T.L. Martin, T.J. College Park, Md. : Entomological Society of America. Journal of economic entomology. Apr 1988. v. 81 (2). p. 731-734. illl. Includes references. (NAL Call No.: DNAL 421 J822).

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Virus diseases of wheat.

AGRYA. Brakke, M.K. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (13). p. 585-624. Includes references. (NAL Call No.: DNAL 4 AM392).

1151

Wheat rosette and its control /by H.H. McKinney, R.W. Webb, and G.H. Dungan.

McKinney, Harold Hall, 1889-. Webb, Robert W. 1895-; Dungan, George Harlan, 1887-. Urbana, Ill. : University of Illinois Agricultural Experiment Station, in cooperation with Office of Cereal Investigations, Bureau of Plant Industry, U.S. Dept. of Agriculture, 1925. Cover title. p. 273 -296, 1 leaf of plates : illl. (some col.) ; 23 cm. Bibliography: p. 296. (NAL Call No.: DNAL 100 I16S no.264).

PLANT DISEASES - PHYSIOLOGICAL

1152

Beneficial effects of nickel on plant growth.
JPNUDS. Brown, P.H. Welch, R.M.; Cary, E.E.; Checkai, R.T. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 2125-2135. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

1153

Cation amelioration of aluminum toxicity in wheat.
PLPRA. Kinraide, T.B. Parker, D.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1987. v. 83 (3). p. 546-551. Includes references. (NAL Call No.: DNAL 450 P692).

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Critical nutrient levels related to plant growth and some physiological processes.
JPNUDS. Ohki, K. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 1583-1590. Includes references. (NAL Call No.: DNAL QK867.J67).

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The effect of gypsum on copper nutrition of wheat grown in marginally deficient soil.
JPNUDS. Gardner, W.K. Flynn, A. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1988. v. 11 (4). p. 475-493. Includes references. (NAL Call No.: DNAL QK867.J67).

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Effects of normal and Fe-treated organic matter on Fe chlorosis and yields of grain sorghum.
CSOSA2. Mostaghimi, S. Matocha, J.E. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Oct 1988. v. 19 (13). p. 1415-1428. Includes references. (NAL Call No.: DNAL S590.C63).

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Influence of soil and applied chloride on several wheat parameters.
AGJOAT. Fixen, P.E. Buchenau, G.W.; Gelderman, R.H.; Schumacher, T.E.; Gerwing, J.R.; Cholick, F.A.; Farber, B.G. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1986. v. 78 (4). p. 736-740. Includes references. (NAL Call No.: DNAL 4 AM34P).

1158

Lodging control in wheat and barley with a plant growth regulator.
Harms, C.L. West Lafayette, Ind. : The Service. AY - Purdue University Cooperative Extension Service. July 1986. (261). 2 p. ill. (NAL Call No.: DNAL S544.3.I6P82).

1159

Manganese deficiency and toxicity effects on photosynthesis, chlorophyll, and transpiration in wheat.
CRPSAY. Ohki, K. Madison, Wis. : Crop Science Society of America. Crop science. Jan 1985. v. 25 (1). p. 187-191. ill. Includes 23 references. (NAL Call No.: DNAL 64.8 C883).

1160

Peroxide coated seed emergence in water-saturated soil.
AGJOAT. Langan, T.D. Pendleton, J.W.; Oplinger, E.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1986. v. 78 (5). p. 769-772. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Phosphorus-induced zinc deficiency in wheat on residual phosphorus plots.
AGJOAT. Singh, J.P. Karamanos, R.E.; Stewart, J.W.B. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1986. v. 78 (4). p. 668-675. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Allelopathic effect of parthenium (Parthenium hysterophorus L.) extract and residue on some agronomic crops and weeds.

JCECD. Mersie, W. Singh, M. New York, N.Y. : Plenum Press. *Journal of chemical ecology*. July 1987. v. 13 (7). p. 1739-1747. Includes references. (NAL Call No.: DNAL QD415.A1J6).

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Allelopathy in agroecosystems: wheat phytotoxicity and its possible roles in crop rotation.

JCECD. Lodhi, M.A.K. Bilal, R.; Malik, K.A. New York, N.Y. : Plenum Press. *Journal of chemical ecology*. Aug 1987. v. 13 (8). p. 1881-1891. Includes references. (NAL Call No.: DNAL QD415.A1J6).

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Aluminum speciation and phytotoxicity in dilute hydroxy-aluminum solutions.

SSJD4. Parker, D.R. Kinnrade, T.B.; Zelazny, L.W. Madison, Wis. : The Society. *Soil Science Society of America journal*. Mar/Apr 1988. v. 52 (2). p. 438-444. Includes references. (NAL Call No.: DNAL 56.9 S03).

1165

Bioactivity of metribuzin in a controlled-release formulation on 'Vona' winter wheat and downy brome.

Anderson, R.L. Riggle, B.D. S.1. : The Society. *Research progress report - Western Society of Weed Science*. 1988. p. 322-323. (NAL Call No.: DNAL 79.9 W52R).

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Cadmium levels in soils and plants from some long-term soil fertility experiments in the United States of America.

JEVQAA. Mortvedt, J.J. Madison, Wis. : American Society of Agronomy. *Journal of environmental quality*. Apr/June 1987. v. 16 (2). p. 137-142. Includes references. (NAL Call No.: DNAL QH540.J6).

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Changes in adenine nucleotides and energy charge in isolated winter wheat cells during low temperature stress.

PLPFA. Pomeroy, M.K. Andrews, C.J. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. June 1986. v. 81 (2). p. 361-366. Includes 19 references. (NAL Call No.: DNAL 450 P692).

1168

Characterization of the mode of action of the experimental herbicide LS 82-556

(S)3-N-(Methylbenzyl)carbamoyl-5-propionyl-2,6-lutidine .

PCPB. Matringe, M. Dufour, J.L.; Lherminier, J.; Scalla, R. Duluth, Minn. : Academic Press.

Pesticide biochemistry and physiology. Oct

1986. v. 26 (2). p. 150-159. ill. Includes

references. (NAL Call No.: DNAL SB951.P49).

1169

Chromosomal locations of genes for traits associated with lodging in winter wheat.

CRPSAY. Al-Qaudhy, W. Morris, R.; Mumm, R.F.; Hanna, M.A. Madison, Wis. : Crop Science Society of America. *Lodging in wheat (Triticum aestivum L.)* is a complex character which is influenced by morphological traits as well as environmental conditions. Wheat breeding programs would benefit from cytogenetic information on lodging and associated traits.

Reciprocal substitutions between the hard red winter wheats, 'Wichita' and 'Cheyenne', for all chromosomes except Cheyenne 2B in Wichita were used to investigate additive and

interactive effects of individual chromosomes on nine traits previously reported to be associated with lodging. Duplicate lines for each chromosome except Cheyenne 3B in Wichita were included to check background homogeneity.

Straw strengths were measured by using an Instron universal testing machine (Instron Ltd., Canton, Ma) to break basal internodes of main tillers from plants grown in a field on a Sharpsburg silty-clay loam soil (fine, montmorillonitic, mesic Typic Argiudolls) at Lincoln, NE, with a randomized complete block design.

Data on the other eight traits (height, length and diameter of basal internodes, number and width of inner vascular bundles, width of culm wall, diameter of culm cavity, and width of tissue from epidermis through sclerenchyma layer) were collected from main tillers of a greenhouse planting with an augmented randomized complete block design. Wichita and Cheyenne differed significantly only in plant height and basal-internode length among the nine traits. Substitutions of Cheyenne

chromosomes into Wichita produced almost three times as many significant phenotypic changes as substitutions of Wichita chromosomes into Cheyenne. Reciprocal effects were obtained for chromosomes 3B (number of vascular bundles and culm-wall width) and 3D (basal-internode diameter). Each of the three Cheyenne

homoeologous Group 4 chromosome pairs increased the number of vascular bundles in Wichita.

Cheyenne chromosomes 3B and 6A each produced favorable effects in Wichita on several traits related to lodging resistance. Other Cheyenne chromosomes w. Crop science. July/Aug 1988. v. 28 (4). p. 631-635. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Comparative phototoxicity of glyphosate, SC-0224, SC-0545, and HOE-00661.
WEESA6. Carlson, K.L. Burnside, O.C. Champaign, Ill. : Weed Science Society of America. *Weed science*. Nov 1984. v. 32 (6). p. 841-844. ill. Includes 9 references. (NAL Call No.: DNAL 79.8 W41).

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Contaminant transport in agroecosystems through retention of soil particles on plant surfaces.
JEVQAA. Pinder, J.E. III. McLeod, K.W. Madison, Wis. : American Society of Agronomy. The contamination of plant surfaces with soil particles is a potentially important process in the transport of insoluble contaminants such as radionuclides, heavy metals, and hydrophobic organics in agroecosystems, but few data are available to assess the significance of this mechanism for different crop species. The mass of soil particle retained on the surfaces of corn (*Zea mays* L.) and sunflower (*Helianthus annus* L.) grown under field conditions were measured using the ²³⁸Pu content of the plants to indicate retention of soil. The crops demonstrated similar quantities and height distributions of soil retained on leaf and stem surfaces. Mean retention was 0.86 g soil retained on corn vegetation per square meter of land surface and 0.79 g m⁻¹ retained on sunflower. Most of the soil was on the lower 1 m of the vegetation. The height distributions of retained soil can explain the larger concentrations of soil observed in the mechanically harvested grains of short stature crops such as wheat (*Triticum aestivum* L.) (120 mg soil per kg grain) and soybean *Glycine max* (L.) Merr. (82 mg kg⁻¹) than that observed in taller crops such as corn (2 mg kg⁻¹). The significance of soil retention in determining the accumulation of contaminants in grains is evaluated for several important agricultural crops. *Journal of environmental quality*. Oct/Dec 1988. v. 17 (4). p. 602-607. Includes references. (NAL Call No.: DNAL QH540.J6).

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Critical nutrient levels related to plant growth and some physiological processes.
JPNUDS. Ohki, K. New York, N.Y. : Marcel Dekker. *Journal of plant nutrition*. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 1583-1590. Includes references. (NAL Call No.: DNAL QK867.J67).

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Crop injury and grain yield following applications of DPX G8311 and DPX R9674.
Brewster, B.D. Spinney, R.L.; Appleby, A.P. S.I. : The Society. *Research progress report - Western Society of Weed Science*. 1988. p. 307-308. (NAL Call No.: DNAL 79.9 W52R).

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Determination of aluminum toxicity in Indiana soils by petri dish bioassay.
PIACA. Karr, M.C. Coutinho, J.; Ahlrichs, J.L. Indianapolis, Ind. : The Academy. *Proceedings of the Indiana Academy of Science*. 1983 (pub. 1984). v. 93. p. 405-411. Includes 8 references. (NAL Call No.: DNAL 500 IN2).

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Development of early warning models.
Boatwright, G.O. Ravet, F.W.; Taylor, T.W. Beltsville, Md. : The Service. ARS - United States Department of Agriculture, Agricultural Research Service. June 1985. (38). p. 188-195. Includes references. (NAL Call No.: DNAL aS21.R44A7).

1176

Differential metabolism of metribuzin by downy brome (*Bromus tectorum*) and winter wheat (*Triticum aestivum*).
WEESA6. Devlin, D.L. Gealy, D.R.; Morrow, L.A. Champaign, Ill. : Weed Science Society of America. *Weed science*. Nov 1987. v. 35 (6). p. 741-745. Includes references. (NAL Call No.: DNAL 79.8 W41).

1177

Differential tolerance of spring wheat and spring barley cultivars to three sulfonylurea herbicides.
Spratling, D.L. Whitesides, R.E. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1986. p. 204-206. (NAL Call No.: DNAL 79.9 W52R).

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Downy brome control in winter wheat.
Miller, S.D. Krall, J.M. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1987. p. 323. (NAL Call No.: DNAL 79.9 W52R).

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Effect of aluminum on growth and distribution of aluminum in tolerant and sensitive cultivars of *Triticum aestivum* L.
CSOSA2. Zhang, G. Taylor, G.J. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May/Sept 1988. v. 19 (7/12). p. 1195-1205. Includes references. (NAL Call No.: DNAL S590.C63).

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Effect of FMC-57020 on plant growth and pigment synthesis.
PNWSB. Devlin, R.M. Koszanski, Z.K. Beltsville, Md. : The Society. Proceedings of the ... annual meeting - Northeastern Weed Science Society. 1987. v. 41. p. 95-99. Includes references. (NAL Call No.: DNAL 79.9 N814).

1181

Effect of hydrogen fluoride fumigation in *Triticum aestivum*, *Brassica juncea* and *Phaseolus aureus* plants.
FLUOA. Sharma, H.C. Warren, Mich. : International Society for Fluoride Research. Fluoride. Jan 1985. v. 18 (1). p. 15-22. ill. Includes 17 references. (NAL Call No.: DNAL QP981.F55F55).

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Effect of mefluidide on growth and heading of *Triticum aestivum* L.
JPGDI. Undersander, D.J. New York, N.Y. : Springer. Journal of plant growth regulation. 1986. v. 5 (2). p. 85-89. Includes references. (NAL Call No.: DNAL QK745.J6).

1183

The effect of seeding rate and seeding depth on spring wheat injury from triallate.
Fay, P.K. Davis, E.S. S.1. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 227. (NAL Call No.: DNAL 79.9 W52R).

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Effect of sethoxydim on pigment synthesis and enzyme activity in plants.
PNWSB. Devlin, R.M. Karczmarczyk, S.J.; Zbiec, I.I. Beltsville, Md. : The Society. Proceedings of the ... annual meeting - Northeastern Weed Science Society. 1985. v. 39. p. 106-111. Includes 11 references. (NAL Call No.: DNAL 79.9 N814).

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Effect of soil pH on degradation, movement, and plant uptake of chlorsulfuron.
WEESA6. Fredrickson, D.R. Shea, P.J. Champaign, Ill. : Weed Science Society of America. Weed science. Mar 1986. v. 34 (2). p. 328-332. Includes 12 references. (NAL Call No.: DNAL 79.8 W41).

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Effect of tagetitoxin on the levels of ribulose 1,5-bisphosphate carboxylase, ribosomes, and RNA in plastids of wheat leaves.
PLPHA. Lukens, J.H. Mathews, D.E.; Durbin, R.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1987. v. 84 (3). p. 808-813. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Effects of diclofop and diclofop-methyl on the membrane potentials of wheat and oat coleoptiles.
PLPHA. Wright, J.P. Shimabukuro, R.H. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1987. v. 85 (1). p. 188-193. Includes references. (NAL Call No.: DNAL 450 P692).

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Effects of excess levels of a polymer as a soil conditioner on yields and mineral nutrition of plants.
SOSCAK. Wallace, A. Wallace, G.A.; Abouzamzam, A.M. Baltimore, Md. : Williams & Wilkins. Soil science. May 1986. v. 141 (5). p. 377-380. Includes references. (NAL Call No.: DNAL 56.8 S03).

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Effects of excess water stress on wheat yields.
Carter, C.E. Halverson, B.; McDaniel, V. St. Joseph, Mich. : The Society. American Society of Agricultural Engineers (Microfiche collection). Paper presented at the 1985 Winter Meeting of the American Society of Agricultural Engineers. Available for purchase from: The American Society of Agricultural Engineers, Order Dept., 2950 Niles Road, St. Joseph, Michigan 49085. Telephone the Order Dept. at (616) 429-0300 for information and prices. 1985. (fiche no. 85-2569). 14 p. ill. (NAL Call No.: DNAL FICHE S-72).

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Effects of sulfur dioxide and ambient ozone on winter wheat and lettuce.

JEVQAA. Olszyk, D.M. Bytnerowicz, A.; Kats, G.; Dawson, P.J.; Wolf, J.; Thompson, C.R. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1986. v. 15 (4). p. 363-369. Includes references. (NAL Call No.: DNAL QH540.J6).

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Effects of various fungicides and insecticides on emergence of three wheat cultivars.

AGJDAT. Khaleeq, B. Klatt, A. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1986. v. 78 (6). p. 967-970. Includes references. (NAL Call No.: DNAL 4 AM34P).

1192

Environment and cultivar effects on winter wheat response to ethephon plant growth regulator.

AGJDAT. Wiersma, D.W. Oplinger, E.S.; Guy, S.O. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1986. v. 78 (5). p. 761-764. Includes references. (NAL Call No.: DNAL 4 AM34P).

1193

Evaluation of chlorsulfuron in wheat (*Triticum aestivum*) and in a wheat-soybean (*Glycine max*) double-cropping system.

WEESA6. Khodayari, K. Frans, R.E.; Akkari, K.H. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 746-749. Includes 12 references. (NAL Call No.: DNAL 79.8 W41).

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Evaluation of salt-fluxing residue as a potential potassium-magnesium fertilizer in the Pacific Northwest.

CSOSA2. Mahler, R.L. Liu, C.T.; Menser, H.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. June 1986. v. 17 (6). p. 679-695. Includes 29 references. (NAL Call No.: DNAL S590.C63).

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Falling of wheat culms due to lodging, buckling, and breaking /by Hurley Fellows.
Fellows, Hurley, 1892-. Washington, D.C. : U.S. Dept. of Agriculture, 1948. Caption title.~ Joint contribution of the Agricultural Research Administration and the Kansas Agricultural Experiment Station.~ Contribution no. 327, serial no. 77, Department of Botany, Kansas Agricultural Experiment Station. 16 p. : ill. ;

23 cm. Bibliography: p. 15-16. (NAL Call No.: DNAL 1 Ag84C no.767).

1196

Gene induction and repression by salt treatment in roots of the salinity-sensitive Chinese spring wheat and the salinity-tolerant Chinese spring *X Elytrigia elongata* amphiploid.
PNASA. Gulick, P. Dvorak, J. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Jan 1987. v. 84 (1). p. 99-103. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

1197

Herbicidal effects of fomesafen.

PNWSB. Devlin, R.M. Koszanski, Z.K. College Park, Md. : The Society. Proceedings of the annual meeting - Northeastern Weed Science Society. Meeting held January 6, 7 & 8, 1988 in Hartford, Connecticut. 1988. v. 42. p. 67-72. Includes references. (NAL Call No.: DNAL 79.9 N814).

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Ice encasement injury to microsomal membranes from winter wheat crowns. I. Comparison of membrane properties after lethal ice encasement and during a post-thaw period.

PLPFA. Hetherington, P.R. McKersie, B.D.; Borochov, A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1987. v. 85 (4). p. 1068-1072. Includes references. (NAL Call No.: DNAL 450 P692).

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Ice-encasement injury to microsomal membranes isolated from winter wheat crowns. II. Changes in membrane lipids during ice encasement.

PLPFA. Hetherington, P.R. Broughton, H.L.; McKersie, B.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1988. v. 86 (3). p. 740-743. Includes references. (NAL Call No.: DNAL 450 P692).

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Implications of a global climatic warming for agriculture: a review and appraisal.

JEVQAA. Smit, B. Ludlow, L.; Brklacich, M. Madison, Wis. : American Society of Agronomy. Recently it has been recognized that changes in the chemical composition of the atmosphere are likely to alter the earth's climate, and that these alterations may have severe implications for agriculture and other economic activities. This has stimulated research into the possible consequences of altered climatic regimes on

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several attributes or components of agri-food systems. Current consensus suggests that a global climatic warming, induced by increased concentrations of CO₂ and other "greenhouse" gases, is likely, and hence the possible implications of warmer climates for agriculture has received considerable attention. Several analytical procedures have been employed in these studies and it is timely to assess the characteristics and achievements of these independent efforts. This paper classifies and reviews studies that examine the implications of climatic warming for agriculture. Three approaches to assessment are recognized. Crop yield analysis identifies the effects of a specified change in climate on productivity levels for individual crops in particular locations. Spatial analysis examines the implications of climatic warming for the area and location of lands suitable for crop production. Agricultural systems analysis focuses on the relationships among components of agri-food systems. Much remains to be learned about the effects of climatic warming on agriculture. The use of existing information to develop a comprehensive analysis is hampered by differences in analytical approaches and in climatic change scenarios, and by the virtual absence of information on the possible implications of climatic change on agriculture in developing nations. Nevertheless, current evidence suggests that a warmer climate could create a more favorable environment for wheat (*Triticum aestivum* L.) and grain corn (*Zea mays* L.) in Canada, Northern Europe, and the USSR, and restrict opportunities in the USA. *Journal of environmental quality*. Oct/Dec 1988. v. 17 (4). p. 519-527. Includes references. (NAL Call No.: DNAL QH540.J6).

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Improving accuracy of combine loss monitors.
Downs, H.W. Stone, M.L. St. Joseph, Mich. : The Society. American Society of Agricultural Engineers (Microfiche collection). Paper presented at the 1986 Winter Meeting of the American Society of Agricultural Engineers. Available for purchase from: The American Society of Agricultural Engineers, Order Dept., 2950 Niles Road, St. Joseph, Michigan 49085. Telephone the Order Dept. at (616) 429-0300 for information and prices. 1986. (fiche no. 86-1582). 28 p. ill. Includes references. (NAL Call No.: DNAL FICHE S-72).

1202

Inactivation of metribuzin in winter wheat by activated carbon.
WEESA6. Rydrych, D.J. Champaign, Ill. : Weed Science Society of America. *Weed science*. Mar 1985. v. 33 (2). p. 229-232. Includes 13 references. (NAL Call No.: DNAL 79.8 W41).

1203

Interactive effects of freezing and common root rot fungi on winter wheat.
PHYTAJ. Fernandez, J.A. Wofford, D.S.; Horton, J.L. St. Paul, Minn. : American Phytopathological Society. *Phytopathology*. July 1985. v. 75 (7). p. 845-847. Includes 21 references. (NAL Call No.: DNAL 464.8 P56).

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L-2-Oxothiazolidine-*β*-carboxylic acid protection against tridiphane toxicity.
WEESA6. Hilton, J.L. Pillai, P. Champaign, Ill. : Weed Science Society of America. *Weed science*. Sept 1986. v. 34 (5). p. 669-675. Includes references. (NAL Call No.: DNAL 79.8 W41).

1205

Mechanisms of aluminum tolerance in *Triticum aestivum* L. (wheat). I. Differential pH induced by winter cultivars in nutrient solutions.
AJBOA. Taylor, G.J. Foy, C.D. Baltimore, Md. : Botanical Society of America. *American journal of botany*. May 1985. v. 72 (5). p. 695-701. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Mechanisms of aluminum tolerance in *Triticum aestivum* L. (wheat). II. Differential pH induced by spring cultivars in nutrient solutions.
AJBOA. Taylor, G.J. Foy, C.D. Baltimore, Md. : Botanical Society of America. *American journal of botany*. May 1985. v. 72 (5). p. 702-706. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Metabolism of pentachlorophenol in cell suspension cultures of soybean (*Glycine max* L.) and wheat (*Triticum aestivum* L.). General results and isolation of lignin metabolites.
JAFCAU. Scheel, D. Schafer, W.; Sandermann, H. Jr. Washington, D.C. : American Chemical Society. *Journal of agricultural and food chemistry*. Nov/Dec 1984. v. 32 (6). p. 1237-1241. Includes references. (NAL Call No.: DNAL 381 J8223).

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Metabolism of the persistent plasticizer chemical bis(2-ethylhexyl) phthalate in cell suspension cultures of wheat (*Triticum aestivum* L.). Discrepancy from the intact plant.
JAFCAU. Krell, H.W. Sandermann, H. Jr. Washington, D.C. : American Chemical Society.

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Journal of agricultural and food chemistry. Mar/Apr 1986. v. 34 (2). p. 194-198. Includes references. (NAL Call No.: DNAL 381 J8223).

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Method for evaluating germplasm response to chemical treatment under field conditions.
CRPSAY. Deaton, W.R. Mascia, P.N. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 606-607. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Osmotic adjustment, symplast volume, and nonstomatal mediated water stress inhibition of photosynthesis in wheat.
PLPPA. Gupta, A.S. Berkowitz, G.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1987. v. 85 (4). p. 1040-1047. Includes references. (NAL Call No.: DNAL 450 P692).

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Persistence of phytotoxicity of metribuzin and its ethylthio analog.
WEESA6. Shaw, D.R. Peeper, T.F.; Westerman, R.L. Champaign, Ill. : Weed Science Society of America. Weed science. May 1986. v. 34 (3). p. 409-412. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Photosynthesis, chlorophyll, and transpiration responses in aluminum stressed wheat and sorghum.
CRPSAY. Ohki, K. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 572-575. Includes 19 references. (NAL Call No.: DNAL 64.8 C883).

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Phytotoxic effects of pre- and postemergence herbicide treatments on 'Yecora Rojo' wheat, Tulelake Field Station, California.
Mitich, L.W. Smith, N.L.; Duey, M.S. S.1. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1987. p. 287-288. (NAL Call No.: DNAL 79.9 W52R).

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Phytotoxicity and metabolism of chlortoluron in two wheat varieties.
PCPB. Cabanne, F. Gaillardon, P.; Scalla, R. New York, N.Y. : Academic Press. Pesticide biochemistry and physiology. Apr 1985. v. 23 (2). p. 212-220. ill. Includes 10 references. (NAL Call No.: DNAL SB951.P49).

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Phytotoxicity of leachate from coastal bermudagrass roots on germination and root growth of grass and clover.
Nelson, L.R. Smith, G.R.; Bateman, C. College Station, Tex. : The Station. PR - Texas Agricultural Experiment Station. Oct 1984. (4253). p. 217-220. Includes references. (NAL Call No.: DNAL 100 T31P).

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Phytotoxicity of organic acids as influenced by montmorillonite, hydroxy-A1 montmorillonite and phosphate fertilization.
CSOSA2. Goh, T.B. Huang, P.M.; Rennie, D.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May 1986. v. 17 (5). p. 515-531. Includes 37 references. (NAL Call No.: DNAL S590.C63).

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Plant stress and stress-yield relationships determined using remotely sensed data.
Jackson, R.D. Reginato, R.J.; Idson, S.B.; Pinter, P.J. Jr. Beltsville, Md. : The Service. ARS - United States Department of Agriculture, Agricultural Research Service. June 1985. (38). p. 108-126. Includes references. (NAL Call No.: DNAL aS21.R44A7).

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Proton extrusion by wheat roots exhibiting severe aluminum toxicity symptoms.
PLPPA. Kinraide, T.B. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1988. v. 88 (2). p. 418-423. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Rain-induced harvest losses in swathed and standing wheat.
NDKRA. Bauer, A. Black, A.L. Fargo, N.D. : The Station. North Dakota research report - North Dakota Agricultural Experiment Station. Sept 1983. (97). 11 p. Includes references. (NAL Call No.: DNAL 100 N813R).

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The relationship of *Xanthomonas campestris* pv. *translucens* to frost and the effect of frost on black chaff development in wheat.

PHYTAJ. Azad, H. Schaad, N.W. St. Paul, Minn. : American Phytopathological Society. *Phytopathology*. Jan 1988. v. 78 (1). p. 95-100. Includes references. (NAL Call No.: DNAL 464.8 P56).

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The relative phytotoxicity of selected hydrocarbon and oxygenated solvents and oils.

Krenek, M.R. King, D.N. Philadelphia, PA : ASTM, c1987. Pesticide formulations and application systems : sixth volume : a symposium sponsored by ASTM Committee E-35 on Pesticides, Bal Harbour, FL, 6-7 Nov. 1985 / David I.B. Vander Hooven, Larry D. Spicer, editors. p. 3-19. Includes references. (NAL Call No.: DNAL SB950.93.P47 1987).

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Residual phytotoxicity of chlorsulfuron in two soils.

JEVQAA. Anderson, R.L. Barrett, M.R. Madison, Wis. : American Society of Agronomy. *Journal of environmental quality*. Jan/Mar 1985. v. 14 (1). p. 111-114. Includes references. (NAL Call No.: DNAL QH540.J6).

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WEESA6. Mohan, R. Hassanein, E.E.; Lym, R.G.; Miller, S.D. Champaign, Ill. : Weed Science Society of America. *Weed science*. Mar 1988. v. 36 (2). p. 239-243. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Response of wheat genotypes to trifluralin, triallate, and ethiazin.

Garcia-Torres, L. Appleby, A.P. S.1. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 313-315. (NAL Call No.: DNAL 79.9 W52R).

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WEESA6. Devlin, D.L. Gealy, D.R.; Morrow, L.A. Champaign, Ill. : Weed Science Society of America. *Weed science*. Nov 1987. v. 35 (6). p. 775-779. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Rye (*Secale cereale* L.) and wheat (*Triticum aestivum* L.) mulch: the suppression of certain broadleaved weeds and the isolation and identification of phytotoxins.

ACSMC. Shilling, D.G. Liebl, R.A.; Worsham, D. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. Based on a "Symposium on the Chemistry of Allelopathy, Biochemical Interactions Among Plants," April 1984, St. Louis, Missouri. ~ Literature review. 1985. (268). p. 243-271. ill. Includes 55 references. (NAL Call No.: DNAL QD1.A45).

1227

S-ethyl dipropylthiocarbamate (EPTC) and 2,2-dichloro-N,N-di-2-propenylacetamide (dichlormid) inhibitions of synthesis of acetyl-coenzyme A derivatives.

PCPB. Wilkinson, R.E. Oswald, T.H. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. May 1987. v. 28 (1). p. 38-43. Includes references. (NAL Call No.: DNAL SB951.P49).

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Salt sensitivity in wheat. A case for specific ion toxicity.

PLPBA. Kingsbury, R.W. Epstein, E. Rockville, Md. : American Society of Plant Physiologists. *Plant physiology*. Mar 1986. v. 80 (3). p. 651-654. Includes 30 references. (NAL Call No.: DNAL 450 P692).

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Seedling tolerance to aluminum toxicity in hard red winter wheat germplasm.

CRPSAY. Carver, B.F. Inskeep, W.P.; Wilson, N.P.; Westerman, R.L. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1988. v. 28 (3). p. 463-467. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Selective action of the new herbicide 4-amino-6-(1,1-dimethylethyl)-3-(ethylthio)-1,2,4-triazin-5(4H)-one in different wheat, *Triticum aestivum*, cultivars.

WEESA6. Fedtke, C. Schmidt, R.R. Champaign, Ill. : Weed Science Society of America. 14C-labeled

4-amino-6-(1,1-dimethylethyl)-3-(ethylthio)-1,2,4-triazin-5(4H)-one (ethiozin)3 was metabolized more rapidly in tolerant than in sensitive wheat, *Triticum aestivum* L., cultivars. After a 6-h herbicidal pulse, the main metabolites were conjugates at all incubation times up to 48 h. The levels of deaminated and dethioethylated metabolites never exceeded 4% of the extractable radioactivity and also did not differ between

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tolerant and sensitive plants. On the contrary, 92% of the extractable radioactivity was in conjugates after 24 h in the leaves of tolerant plants compared to 25% in the leaves of sensitive plants. The differently sensitive wheat cultivars conjugated metribuzin, 4-amino-6-(1,1-dimethylethyl)-3-methylthio)-1,2,4-triazin-5(4H)-one, at about half the rate that was observed with ethiozin. This finding may explain the fact that most wheat cultivars are more sensitive to metribuzin compared with ethiozin. *Weed science*. Sept 1988. v. 36 (5). p. 541-544. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Raafat, A. Davis : University of California, Davis?, 1981? . A Conference on biosalinity : the problem of salinity in agriculture : a joint conference of Egyptian, Israeli and American scientists, Univ. of California, Davis, September 1-4, 1981 / organized and. p. 57-62. Includes 6 references. (NAL Call No.: DNAL S619.S24C6).

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CRPSAY. Herrin, L.L. Collins, F.C.; Caviness, C.E. Madison, Wis. : Crop Science Society of America. *Crop science*. May/June 1986. v. 26 (3). p. 641-643. Includes 16 references. (NAL Call No.: DNAL 64.8 C883).

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Mitich, L.W. Smith, N.L. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 216-217. (NAL Call No.: DNAL 79.9 W52R).

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Lish, J.M. Thill, D.C. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 202-203. (NAL Call No.: DNAL 79.9 W52R).

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Brewster, B.D. Appleby, A.P.; Spinney, R.L. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 281. (NAL Call No.: DNAL 79.9 W52R).

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WEESA6. De St Remy, A.E. O'Donovan, J.T.; Tong, A.K.W.; O'Sullivan, P.A.; Sharma, M.P.; Dew, D.A. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 521-523. Includes 9 references. (NAL Call No.: DNAL 79.8 W41).

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Long-term effects of no-tillage in a winter wheat (*Triticum aestivum*)-sorghum (*Sorghum bicolor*)-fallow rotation.

WEESA6. Wicks, G.A. Smika, D.E.; Hergert, G.W. Champaign, Ill. : Weed Science Society of America. Abstract: This research was conducted

near North Platte, NE, over an 18-yr period to determine the feasibility of using herbicides to replace tillage as the weed control method in a winter wheat (*Triticum aestivum* L.)-sorghum *Sorghum bicolor* (L.) Moench. -fallow rotation. Five tillage treatments two tillage and three reduced or no-till treatments were used on the same plots during the duration of this experiment on a Holdrege silt loam (Typic Argiustolls). Herbicides effectively replaced tillage for weed control. The no-till plots treated with atrazine

6-chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine after wheat harvest had higher sorghum and winter wheat yields, higher crop residue remaining on the soil surface, and lower weed yields than tilled plots. The most difficult weeds to control were volunteer wheat and barnyardgrass *Echinochloa crusgalli* (L.) Beauv. ~ ECHCG. Soil surface pH decreased over time because of increased use of nitrogen. The pH in nontilled plots was significantly lower than in tilled plots due to lack of soil mixing. Exchangeable calcium was the predominant cation leached from the top 5 cm but showed accumulation between the 5- to 12.5-cm depth. Organic matter content showed little change over time. Weed science. May 1988. v. 36 (3). p. 384-393. Includes references. (NAL Call No.: DNAL 79.8 W41).

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 WEESA6. Anderson, R.L. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1986. v. 34 (5). p. 734-737. Includes references. (NAL Call No.: DNAL 79.8 W41).

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 Whitesides, R.E. Swan, D.G. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 230-231. (NAL Call No.: DNAL 79.9 W52R).

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 Dowell, F.E. Solie, J.B.; Pepper, T.F. St. Joseph, Mich. : The Society. American Society of Agricultural Engineers (Microfiche collection). Paper presented at the 1985 Winter Meeting of the American Society of Agricultural Engineers. Available for purchase from: The American Society of Agricultural Engineers, Order Dept., 2950 Niles Road, St. Joseph, Michigan 49085. Telephone the Order Dept. at (616) 429-0300 for information and prices. 1985. (fiche no. 85-1514). 21 p. ill. Includes references. (NAL Call No.: DNAL FICHE S-72).

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 Anderson, R.L. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 286. (NAL Call No.: DNAL 79.9 W52R).

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 WEESA6. Donald, W.W. Zimdahl, R.L. Champaign, Ill. : Weed Science Society of America. Weed science. Mar 1987. v. 35 (2). p. 149-154. maps. Includes references. (NAL Call No.: DNAL 79.8 W41).

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 Dial, M.J. Thill, D.C.; Morishita, D.W. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1987. p. 332-333. (NAL Call No.: DNAL 79.9 W52R).

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 WEESA6. Gillespie, G.R. Nalewaja, J.D. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1986. v. 34 (6). p. 942-947. Includes references. (NAL Call No.: DNAL 79.8 W41).

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 Lish, J.M. Thill, D.C.; Yenne, S.P. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1987. p. 303-305. (NAL Call No.: DNAL 79.9 W52R).

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Postemergence herbicide suppression of wheat, *Triticum aestivum*, growing with alfalfa, *Medicago sativa*.
 WEESA6. Beardmore, R.A. Linscott, D.L. Champaign, Ill. : Weed Science Society of America. Two field experiments were conducted in 1984 and 1985 to determine the effects of fluazifop, haloxyfop, and sethoxydim on the suppression of water uptake and competition of wheat to seedling alfalfa. In all cases, suppression of wheat growth and stand led to

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significant reduction in soil water use. The amounts of conserved soil water significantly correlated with increased numbers at alfalfa plants; the correlation coefficients, respectively, for mid- and late-summer plantings were 0.47 and 0.41 in 1984 and 0.90 and 0.86 in 1985. Conservation of soil water was attributed to growth reduction or cessation of wheat growth by the herbicides and, to some extent, suppression of wheat leaf transpiration. All of the three herbicides would be effective in controlling volunteer wheat in a new alfalfa planting. *Weed science*. Sept 1988. v. 36 (5). p. 636-641. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Evans, J.O. Gunnell, R.W.; Downard, R.W. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 228-229. (NAL Call No.: DNAL 79.9 W52R).

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WEESA6. Richardson, J.M. Gealy, D.R.; Morrow, L.A. Champaign, Ill. : Weed Science Society of America. *Weed science*. Mar 1987. v. 35 (2). p. 277-281. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Yee, D. Weinberger, P.; Khan, S.U. Champaign, Ill. : Weed Science Society of America. *Weed science*. Nov 1985. v. 33 (6). p. 882-887. ill. Includes 29 references. (NAL Call

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Fay, P.K. Davis, E.S. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 209. (NAL Call No.: DNAL 79.9 W52R).

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Response differences of wheat (*Triticum aestivum*) and barley (*Hordeum vulgare*) to chlorsulfuron.

WEESA6. Foley, M.E. Champaign, Ill. : Weed Science Society of America. *Weed science*. Jan 1986. v. 34 (1). p. 17-21. Includes 9 references. (NAL Call No.: DNAL 79.8 W41).

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Response of spring wheat to N fertilizer placement, row spacing, and wild oat herbicides in a no-till system.

AGJOAT. Reinertsen, M.R. Cochran, V.L.; Morrow, L.A. Madison, Wis. : American Society of Agronomy. *Agronomy journal*. Sept/Oct 1984. v. 76 (5). p. 753-756. Includes 24 references. (NAL Call No.: DNAL 4 AM34P).

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PCPB. Jacobson, A. Shimabukuro, R.H.; McMichael, C. New York, N.Y. : Academic Press. *Pesticide biochemistry and physiology*. Aug 1985. v. 24 (1). p. 61-67. ill. Includes references. (NAL Call No.: DNAL SB951.P49).

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JEVQAA. Biederbeck, V.O. Campbell, C.A.; Smith, A.E. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. July/Sept 1987. v. 16 (3). p. 257-262. Includes references. (NAL Call No.: DNAL QH540.J6).

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JEVQAA. Anderson, R.L. Madison, Wis. : American Society of Agronomy. *Journal of environmental quality*. Oct/Dec 1985. v. 14 (4). p. 517-521. Includes references. (NAL Call No.: DNAL QH540.J6).

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WEESA6. Khodayari, K. Frans, R.E.; Akkari, K.H. Champaign, Ill. : Weed Science Society of America. *Weed science*. Sept 1985. v. 33 (5). p. 746-749. Includes 12 references. (NAL Call No.: DNAL 79.8 W41).

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Evaluation of fumigants for control of insects attacking wheat and corn in steel bins /by H.H. Walkden and R.B. Schwitzgebel.
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JEVQAA. Smith, A.E. Cessna, A.J.; Shewchuk, S.R.; Hunter, J.H. Madison, Wis. : American Society of Agronomy. *Journal of environmental quality*. July/Sept 1986. v. 15 (3). p. 234-238. Includes references. (NAL Call No.: DNAL QH540.J6).

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Fate of trifluralin and triallate applied as a mixture to a wheat field.
JEVQAA. Grover, R. Smith, A.E.; Shewchuk, S.R.; Cessna, A.J.; Hunter, J.H. Madison, Wis. : American Society of Agronomy. *Dissipation of triallate S-(2,3,3-trichloroallyl) diisopropyl-thiocarbamate and trifluralin (a,a,a-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine) in air and soil* was measured following their application as a pre-emergence treatment

to a wheat (*Triticum aestivum* L.) field. Drift losses during application and incorporation were less than 1% of the amounts applied. Air samples, collected at six heights ranging from 30 to 200 cm above the soil surface initially and then above the crop canopy following emergence during the 67 d after application, showed distinct gradients of each herbicide in the air, with the highest concentrations in samples closest to the ground. The highest flux rates for triallate and trifluralin were 4 and 3 g ha⁻¹ h⁻¹ during the 4- to 6-h period after application, when the concentrations at 30 cm were 2500 and 1700 ng m⁻³ respectively. Fluxes of both herbicides decreased with time, but were dependent mainly on soil moisture conditions. The total vapor losses for the 67-d sampling period were 17.6 and 23.7% triallate and trifluralin, respectively. About half of these losses were in the first week. There were three distinct phases in the dissipation of both herbicides from the soil. The initial rapid phase, with vapor losses as the major route (Phase I), was followed by slow and continual dissipation over the entire growing season (Phase II), with volatilization and degradation as the potential pathways of dissipation. The third phase with little or no dissipation was reflective of the Canadian winter conditions. The gross dissipation of both herbicides during Phases I and II, however, followed the first-order rate equation, with half-concentration time of 88 +/- 7 and 99 +/- 9 d for triallate and trifluralin, respectively, with volatilization as the dominant process during Phase I. *Journal of environmental quality*. Oct/Dec 1988. v. 17 (4). p. 543-550. maps. Includes references. (NAL Call No.: DNAL QH540.J6).

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JEVQAA. Grover, R. Shewchuk, S.R.; Cessna, A.J.; Smith, A.E.; Hunter, J.H. Madison, Wis. : American Society of Agronomy. *Journal of environmental quality*. Apr/June 1985. v. 14 (2). p. 203-210. Includes references. (NAL Call No.: DNAL QH540.J6).

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Grow your own herbicides.
 Raleigh, N.C. : North Carolina Agricultural Research Service. Research perspectives. Fall 1985. v. 4 (3). p. 14. ill. (NAL Call No.: DNAL S97.R4).

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Herbicidal effects of fomesafen.
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 PCBPB. Wilkinson, R.E. New York, N.Y. : Academic Press. Pesticide biochemistry and physiology. Apr 1985. v. 23 (2). p. 289-293. ill. Includes 15 references. (NAL Call No.: DNAL SB951.P49).

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 WEESA6. Hilton, J.L. Pillai, P. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1986. v. 34 (5). p. 669-675. Includes references. (NAL Call No.: DNAL 79.8 W41).

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 JAFCAU. Scheel, D. Schafer, W.; Sandermann, H. Jr. Washington, D.C. : American Chemical Society. Journal of agricultural and food

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CRPSAY. Deaton, W.R. Mascia, P.N. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 606-607. Includes references. (NAL Call No.: DNAL 64.8 C883).

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ACSMC. De Ruiter, H. Verbeek, M.A.M.; Uffing, A.J.M. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1988. (371). p. 44-55. ill. Includes references. (NAL Call No.: DNAL QD1.A45).

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Mitich, L.W. Smith, N.L.; Duey, M.S. S.I. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1987. p. 287-288. (NAL Call No.: DNAL 79.9 W52R).

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JEVQAA. Anderson, R.L. Barrett, M.R. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Jan/Mar 1985. v. 14 (1). p. 111-114. Includes references. (NAL Call No.: DNAL QH540.J6).

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WEESA6. Foley, M.E. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1986. v. 34 (1). p. 17-21. Includes 9 references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Mohan, R. Hassanein, E.E.; Lym, R.G.; Miller, S.D. Champaign, Ill. : Weed Science Society of America. Weed science. Mar 1988. v. 36 (2). p. 239-243. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Devlin, D.L. Gealy, D.R.; Morrow, L.A. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1987. v. 35 (6). p. 775-779. Includes references. (NAL Call No.: DNAL 79.8 W41).

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PCPB. Wilkinson, R.E. Oswald, T.H. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. May 1987. v. 28 (1). p. 38-43. Includes references. (NAL Call No.: DNAL SB951.P49).

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Selective action of the new herbicide 4-amino-6-(1,1-dimethylethyl)-3-(ethylthio)-1,-2,4-triazin-5(4H)-one in different wheat, *Triticum aestivum*, cultivars.

WEESA6. Fedtke, C. Schmidt, R.R. Champaign, Ill. : Weed Science Society of America. 14C-labeled 4-amino-6-(1,1-dimethylethyl)-3-(ethylthio)-1,2,4-triazin-5(4H)-one (ethiozin)3 was metabolized more rapidly in tolerant than in sensitive wheat, *Triticum aestivum* L., cultivars. After a 6-h herbicidal pulse, the main metabolites were conjugates at all incubation times up to 48 h. The levels of deaminated and dethioethylated metabolites never exceeded 4% of the extractable radioactivity and also did not differ between tolerant and sensitive plants. On the contrary, 92% of the extractable radioactivity was in conjugates after 24 h in the leaves of tolerant plants compared to 25% in the leaves of sensitive plants. The differently sensitive wheat cultivars conjugated metribuzin, 4-amino-6-(1,1-dimethylethyl)-3-methylthio)-1,-2,4-triazin-5(4H)-one, at about half the rate that was observed with ethiozin. This finding may explain the fact that most wheat cultivars are more sensitive to metribuzin compared with ethiozin. *Weed science*. Sept 1988. v. 36 (5). p. 541-544. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Some physiological effects of AC-252,214 on several plant growth systems.

PNWSB. Devlin, R.M. Koszanski, Z.K. Beltsville, Md. : The Society. Proceedings of the ... annual meeting - Northeastern Weed Science Society. 1986. v. 40. p. 99-103. Includes references. (NAL Call No.: DNAL 79.9 N814).

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JPFCD2. Westcott, N.D. New York, N.Y. : Marcel Dekker. *Journal of environmental science and health : Part B : Pesticides, food contaminants, and agricultural wastes*. 1988. v. 23 (4). p. 317-330. Includes references. (NAL Call No.: DNAL TD172.J61).

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Tolerance of spring barley and spring wheat cultivars to sulfonylurea herbicides.

Dial, M.J. Thill, D.C. S.I. : The Society. *Research progress report - Western Society of Weed Science*. 1988. p. 311-312. (NAL Call No.: DNAL 79.9 W52R).

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Tolerance of 'Stephens' winter wheat to fluroxypyr.

Brewster, B.D. Appleby, A.P.; Spinney, R.L. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1986. p. 281. (NAL Call No.: DNAL 79.9 W52R).

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Tolerance of 12 varieties of wheat to two rates of AC 222,293 as compared to difenzoquat.

Mitich, L.W. Smith, N.L. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1986. p. 214-215. (NAL Call No.: DNAL 79.9 W52R).

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Uptake of malathion and pirimiphos-methyl by rye, wheat, or triticale stored on treated surfaces.

JEENAI. White, N.D.G. College Park, Md. : Entomological Society of America. *Journal of economic entomology*. Dec 1985. v. 78 (6). p. 1315-1319. Includes references. (NAL Call No.: DNAL 421 J822).

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Weed control in wheat with barban and diclofop.

Mitich, L.W. Smith, N.L.; Kearney, T.; Langston, C. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1986. p. 218-219. (NAL Call No.: DNAL 79.9 W52R).

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Miller, S.D. Nalewaja, J.D. Bozeman, Mont. : Montana State University, Cooperative Extension Service. *Publication - Great Plains Agricultural Council*. This paper was presented at the Great Plains Conservation Tillage symposium dated August 21-23, 1984, North Platte, Nebraska. Aug 21-23, 1984. (110). p. 111-118. Includes 12 references. (NAL Call No.: DNAL S27.A3).

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Wheat tolerance to preplant and preemergence applications of glyphosate plus 2,4-D.

Brewster, B.D. Spinney, R.L.; Appleby, A.P. S.I. : The Society. *Research progress report - Western Society of Weed Science*. 1988. p. 326. (NAL Call No.: DNAL 79.9 W52R).

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Wild oat control in winter wheat with AC-222293.

Whitesides, R.E. Swan, D.G. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1986. p. 253-254. (NAL Call No.: DNAL 79.9 W52R).

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Valverde, B.E. Brewster, B.D.; Appleby, A.P.; Spinney, R.L. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1987. p. 338-340. (NAL Call No.: DNAL 79.9 W52R).

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Stahlman, P. Krall, J.M.; Miller, S.D. S.I. : The Society. *Research progress report - Western Society of Weed Science*. 1988. p. 355. (NAL Call No.: DNAL 79.9 W52R).

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Winter wheat tolerance and mayweed chamomile control with clopyralid.

Brewster, B.D. Appleby, A.P.; Spinney, R.L. S.I. : Western Society of Weed Science. *Research progress report - Western Society of Weed Science*. 1986. p. 280. (NAL Call No.: DNAL 79.9 W52R).

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2-chloro-N,N-di-2-propyleneacetamide reversal of carotenogenic inhibition by low concentration of norflurazon.

PCPB. Wilkinson, R.E. Duluth, Minn. : Academic Press. *Pesticide biochemistry and physiology*. Oct 1987. v. 29 (2). p. 146-151. Includes references. (NAL Call No.: DNAL SB951.P49).

SOIL SCIENCE

1597

**Wheat Soil troubles and seed deterioration,
causes of soil sickness in wheat lands,
possible methods of control, cropping methods
with wheat /by H.L. Bolley.**

Bolley, H. L. 1865-. Fargo : North Dakota
Agricultural College, Government Agricultural
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p. : ill. ; 22 cm. (NAL Call No.: DNAL 100 N813
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SOIL BIOLOGY

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Alginate beads as synthetic inoculant carriers for slow release of bacteria that affect plant growth.

APMBA. Bashan, Y. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. May 1986. v. 51 (5). p. 1089-1098. ill. Includes 28 references. (NAL Call No.: DNAL 448.3 AP5).

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Effect of assay conditions and field exposure on urease activity associated with cereal residues.

CSOSA2. Goos, R.J. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Apr 1985. v. 16 (4). p. 399-409. Includes 9 references. (NAL Call No.: DNAL S590.C63).

1600

Effects of long-term 2,4-D field applications on soil biochemical processes.

JEVQAA. Biederbeck, V.O. Campbell, C.A.; Smith, A.E. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. July/Sept 1987. v. 16 (3). p. 257-262. Includes references. (NAL Call No.: DNAL QH540.J6).

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Environmental effects of metsulfuron and chlorsulfuron bioactivity in soil.

JEVQAA. Anderson, R.L. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1985. v. 14 (4). p. 517-521. Includes references. (NAL Call No.: DNAL QH540.J6).

1602

Preplant tillage effects on population dynamics of soybean insect predators.

CRPSAY. Funderburk, J.E. Wright, D.L.; Teare, I.D. Madison, Wis. : Crop Science Society of America. Tillage operations modify soil habitats where many pests and their natural enemies reside at least during part of their life cycle. Bigeyed bugs (*Geocoris spp.*) and damsel bugs (*Nabis* and *Reduviolus spp.*) are common beneficial polyphagous insect predators in many crops. The objective of this research was to measure effects of tillage on population cycles and population size of those predators to aid in development of cultural IPM (integrated pest management) strategies for biological control of insect pests in soybean *Glycine max* (L.) Merr. double cropped with wheat (*Triticum aestivum* L.). The four tillage regimes used were no tillage and disk tillage with and without in-row subsoiling. Bigeyed bug nymphal and adult population cycles were similar for each tillage/subsoiling treatment.

There were differences between years because in 1986 there was considerable overlap of generations, which was not observed in 1985. Disk tillage treatments had higher bigeyed bug nymphal and adult populations than the no tillage treatments in 1985 and 1986, but subsoiling did not influence population size. Damsel bug population cycles were also similar for all tillage/subsoiling treatments in both years. In 1985, populations of adult and nymphal damsel bugs were lower for no tillage without subsoiling than for disk tillage without subsoiling, disk tillage with subsoiling, or no tillage with subsoiling. Population sizes were similar for all treatments in 1986. Crop science. Nov/Dec 1988. v. 28 (6). p. 973-977. Includes references. (NAL Call No.: DNAL 64.8 C883).

1603

Release of soil-bound prometryne residues under different soil pH and nitrogen fertilizer regimes.

WEESA6. Yee, D. Weinberger, P.; Khan, S.U. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1985. v. 33 (6). p. 882-887. ill. Includes 29 references. (NAL Call No.: DNAL 79.8 W41).

1604

Root hair deformation, bacterial attachment, and plant growth in wheat-*Azospirillum* associations.

APMBA. Jain, D.K. Patriquin, D.G. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. Dec 1984. v. 48 (6). p. 1208-1213. Includes 34 references. (NAL Call No.: DNAL 448.3 AP5).

1605

Suppression of root diseases of wheat by fluorescent pseudomonads and mechanisms of action.

NASSD. Weller, D.M. Cook, R.J. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Iron, siderophores, and plant diseases / edited by T.R. Swinburne. Paper presented at the "NATO Advanced Research Workshop," July 1-5, 1985, Wye, Kent, England. Literature review. 1986. v. 117. p. 99-107. Includes references. (NAL Call No.: DNAL QH301.N32).

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Tillage effects on microbiological release of soil organic nitrogen.

TAEMA. Doran, J.W. College Station, Tex. : The Station. Miscellaneous publication MP - Texas Agricultural Experiment Station. Paper presented at the Southern Region No-Tillage Conference on "Conservation Tillage: Today and

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references. (NAL Call No.: DNAL 100 T31M).

SOIL CHEMISTRY AND PHYSICS

1607

Acid soil tolerances of two wheat cultivars related to soil pH, KCl-extractable aluminum and degree of aluminum saturation.
JPNUDS. Foy, C.D. New York, N.Y. : Marcel Dekker. *Journal of plant nutrition*. Apr 1987. v. 10 (6). p. 609-623. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

1608

Additive and synergistic effects on plant growth from polymers and organic matter applied to soil simultaneously.
SOSCAK. Wallace, A. Wallace, G.A. Baltimore, Md. : Williams & Wilkins. *Soil science*. May 1986. v. 141 (5). p. 334-342. Includes references. (NAL Call No.: DNAL 56.8 S03).

1609

Aggregate stability of a silt loam soil as affected by roots of corn, soybeans and wheat.
CSOSA2. Monroe, C.D. Kladivko, E.J. New York, N.Y. : Marcel Dekker. *Communications in soil science and plant analysis*. Oct 1987. v. 18 (10). p. 1077-1087. Includes references. (NAL Call No.: DNAL S590.C63).

1610

Aluminum tolerance in Canadian spring wheats.
CSOSA2. Zale, J.M. Briggs, K.G. New York, N.Y. : Marcel Dekker. *Communications in soil science and plant analysis*. May/Sept 1988. v. 19 (7/12). p. 1259-1272. ill. Includes references. (NAL Call No.: DNAL S590.C63).

1611

Aluminum tolerance is independent of rhizosphere pH in *Triticum aestivum* L.
CSOSA2. Taylor, G.J. New York, N.Y. : Marcel Dekker. *Communications in soil science and plant analysis*. May/Sept 1988. v. 19 (7/12). p. 1217-1227. Includes references. (NAL Call No.: DNAL S590.C63).

1612

Ammonium bicarbonate-DTPA and DTPA extractions of sludge-amended soils.
JEVQAA. Barbarick, K.A. Workman, S.M. Madison, Wis. : American Society of Agronomy. *Journal of environmental quality*. Apr/June 1987. v. 16 (2). p. 125-130. Includes references. (NAL Call No.: DNAL QH540.J6).

1613

Antagonism and siderophore production by biocontrol agents, plant growth promoting organisms and the general rhizosphere population.
NASSD. Campbell, R. Renwick, A.; Coe, S.K.A.M. New York, N.Y. : Plenum Press. *NATO advanced science institutes series* : Series A : Life sciences. In the series *analytic: Iron, siderophores, and plant diseases* / edited by T.R. Swinburne. Paper presented at the "NATO Advanced Research Workshop," July 1-5, 1985, Wye, Kent, England. 1986. v. 117. p. 179-189. Includes references. (NAL Call No.: DNAL QH301.N32).

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An application of the Maas-Hoffman salinity response model for boron toxicity.
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JEVQAA. Grover, R. Smith, A.E.; Shewchuk, S.R.; Cessna, A.J.; Hunter, J.H. Madison, Wis. : American Society of Agronomy. Dissipation of triallate S-(2,3,3-trichloroallyl) diisopropyl-thiocarbamate and trifluralin (a,a,a-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine) in air and soil was measured following their application as a pre-emergence treatment to a wheat (*Triticum aestivum* L.) field. Drift losses during application and incorporation were less than 1% of the amounts applied. Air samples, collected at six heights ranging from 30 to 200 cm above the soil surface initially and then above the crop canopy following emergence during the 67 d after application, showed distinct gradients of each herbicide in the air, with the highest concentrations in samples closest to the ground. The highest flux rates for triallate and trifluralin were 4 and 3 g ha⁻¹ h⁻¹ during the 4- to 6-h period after

application, when the concentrations at 30 cm were 2500 and 1700 ng m⁻³ respectively. Fluxes of both herbicides decreased with time, but were dependent mainly on soil moisture conditions. The total vapor losses for the 67-d sampling period were 17.6 and 23.7% triallate and trifluralin, respectively. About half of these losses were in the first week. There were three distinct phases in the dissipation of both herbicides from the soil. The initial rapid phase, with vapor losses as the major route (Phase I), was followed by slow and continual dissipation over the entire growing season (Phase II), with volatilization and degradation as the potential pathways of dissipation. The third phase with little or no dissipation was reflective of the Canadian winter conditions. The gross dissipation of both herbicides during Phases I and II, however, followed the first-order rate equation, with half-concentration time of 88 +/- 7 and 99 +/- 9 d for triallate and trifluralin, respectively, with volatilization as the dominant process during Phase I. *Journal of environmental quality*. Oct/Dec 1988. v. 17 (4). p. 543-550. maps. Includes references. (NAL Call No.: DNAL QH540.J6).

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SOSCAK. Wallace, A. Wallace, G.A. Baltimore, Md. : Williams & Wilkins. Soil science. May 1986. v. 141 (5). p. 334-342. Includes references. (NAL Call No.: DNAL 56.8 S03).

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Effect of fertilizer phosphorus particle size on phosphorus fertilizer efficiency.

SSSJD4. Sander, D.H. Eghball, B. Madison, Wis. : The Society. Five field experiments were conducted over 3 yr (1983-1985) to evaluate the effect of P fertilizer particle size on winter wheat (*Triticum aestivum* L.) yield and P uptake. In 1983, an introductory experiment indicated that the P fertilizer particle size could greatly affect fertilizer P effectiveness. Studies in 1984 and 1985 confirmed these observations. In these studies ammonium polyphosphate (11-24-0, N-P-K), at particle weights of 0.00019, 0.0009, 0.025, 0.93, and 22 mg were applied at P rates of 8.4, 16.8, and 25.2 kg P ha⁻¹ on four different soils. Wheat grain yields were increased significantly by applied P on all four soils. Grain yields were affected by P fertilizer particle size only, however, on the Ascalon and Holdrege soils (Aridic and Typic Argiustoll, respectively) where yield increases from applied P were greatest. Maximum grain yield occurred at approximately the intermediate particle size studied (0.025 mg), although optimum particle size was dependent on P rate. As the P rate increased, particle size became less of a factor influencing fertilizer effectiveness. Wheat grain yield at the 8.4-kg ha⁻¹ P rate was 0.31 Mg ha⁻¹ less for the 22-mg particle compared to the 0.025 mg particle. Calculations indicated that the 22-mg fertilizer particles had an average distance of 2.8 cm from one another in the band area, compared to 0.003 cm or a continuous band for the 0.025-mg particles. Phosphorus uptake and other yield components generally paralleled the results with grain yield. Fertilizer P efficiency in terms of fertilizer P uptake, reached a maximum of 47% with a particle size of 0.15 mg and a application rate of 8.4 kg P ha⁻¹ on the Holdrege soil. This was a 20% increase in efficiency over a normal farm fertilizer size of 20-mg particle 1. While optimum fertilizer size probably ranges from 0.025 to 1 mg per particle, the optimum size in

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SSSJD4. McConnell, S.G. Sander, D.H.; Peterson, G.A. Madison, Wis. : The Society. Journal - Soil Science Society of America. Jan/Feb 1986. v. 50 (1). p. 148-153. Includes 32 references. (NAL Call No.: DNAL 56.9 S03).

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Effect of lime and sulfur application to low-pH soil on incidence of *Cephalosporium* stripe in winter wheat.

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Effect of one phosphorus rate placed in different soil volumes on P uptake and growth of wheat.

CSOSA2. Yao, J. Barber, S.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. 1986. v. 17 (8). p. 819-827. Includes 9 references. (NAL Call No.: DNAL S590.C63).

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SOSCAK. Wallace, A. Wallace, G.A.; Abouzamzam, A.M. Baltimore, Md. : Williams & Wilkins. Soil science. May 1986. v. 141 (5). p. 377-380. Includes references. (NAL Call No.: DNAL 56.8 S03).

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Long-term effects of no-tillage in a winter wheat (*Triticum aestivum*)-sorghum (*Sorghum bicolor*)-fallow rotation.

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